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This book contains 28 papers on the interdependence of school finance in the nation, State, and city. The papers discuss the social, economic, and political forces shaping interdependence and tools such as programming-planning-budgeting systems (PPBS) which assist in developing educational programs within these demands. Topics of the papers include (1) trends and issues in school finance; (2) modernization of State finance programs; (3) strengthening State-local relationships in urban education; (4) financial problems of parochial schools; (5) financial issues of improving racial balance in schools; (6) salaries, school budgets, and negotiation; and (7) the use of PPBS, the systems approach, and simulation. The final eight papers describe research recently completed in school finance. (TT)

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NEA COMMITTEE ON EDUCATIONAL FINANCE

Proceedings of the Eleventh National Conference on School Finance

March 31, April 1 and 2, 1968

Dallas, Texas

Sponsored by the

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Contents

Foreword, *William D. Firman* 5

Greetings from the National Education Association, *John D. Sullivan* 7

Interdependence in School Finance: The City, the State, and the Nation, *H. Thomas James* 9

Making Your Own Circumstances, *Ralph W. Yarborough* 18

Modernizing State School Finance Programs: Six Selected Areas, *Eugene P. McLoone* 21

Modernizing State School Finance Programs: A State System To Equalize the Distribution of Education, *J. Alan Thomas* 34

Strengthening the State-Local Relationship in Urban Education:

I. The Challenge for Federal, State, and City Leadership, *William D. Firman* 43

II. City-State Fiscal Relationships in Public Education, *James A. Kelly* 48

III. The Legal Element in School Finance, *E. Edmund Reutter, Jr.* 54

Planning for Educational Development in a Planning, Programming, Budgeting System, *Selma J. Mushkin* and *James R. Cleaveland* 59

Financial Problems of Parochial Schools, *C. Albert Koob* 99

Improving Racial Balance in San Francisco's Schools—Estimating Effectiveness and Costs, *William J. Platt* 105

Systems Approach to Business Management in a Large City, *James A. Tyler* 117

Simulation of Change and Reform in State School Finance Systems: Introduction 122

I. Simulation of Revision and Improvement of the Oregon State School Support System, *Frank Farner* 124

II. Predicting the Consequences of a New Formula for the State of Washington, *Richard Usitalo* 130

III. The Simulated Effects of Using Alternative Property Tax Bases as State and Local Resources in the Apportionment of State School Aid, *James Rose* 137

IV. Simulated Effects of a Total Property Tax Adjustment in a Foundation Program Formula, *Robert R. Rath* 142

Trends and Issues in School Finance, *S. Kern Alexander* 147

Consensus, Conflict, and Expenditures for Education, *Richard A. Rossmiller, James M. Lipham,* and *Russell T. Gregg* 157

Negotiation, the School Budget, and the Future, *Robert A. Asnard* 167

Salary Schedules in Higher Education, *William S. Graybeal* and *Sheila Martin* 177

Awards in School Finance Research

A Financial Analysis of Title I, Public Law 89-10, and the Formation of a Defensible Federal Financial Aid Distribution Plan, *Myron L. Anderson* 192
The Determinants of Educational Effort by Nations, *Walter I. Garms, Jr.* 196
An Analysis of the Relationship of Per-Pupil Expenditure Levels and School Size with North Central Association Evaluations, *Daniel B. Horton, Jr.* 200
The Development of Mathematical Models for the Allocation of School Funds in Relation to School Quality, *Joseph A. Igoe* .. 206
A Study of the Components of the Property Tax Base in Oregon School Districts, *James Rose* 211
A Taxonomic Analysis of the Budget-Making Structure of a Large City School District in the Western United States, *H. Gerard Rowe, Jr.* 217
The Relationship of Selected Factors to School Bond Interest Rates in Selected New York State School Districts, *Richard E. Ten Haken* 227
School Community Relations and Financial Support, *Francis M. Trusty* 231
Roster of Participants 236

Foreword

The COMMITTEE on Educational Finance of the National Education Association sponsors the annual National Conference on School Finance to bring together researchers and practitioners to discuss their common problems of financing American education. *Interdependence in School Finance: The City, the State, the Nation* is the proceedings of the eleventh conference in this series.

The viewpoints expressed in the papers presented at the Conference are the authors' own and do not necessarily reflect the views of the Committee and the National Education Association. The Committee expresses appreciation to the authors of the papers presented here for the high quality of their work.

The interdependence of school finance in the nation, the state, and the city and other local school districts is increasing: New federal grant programs are being enacted; state distributions of funds to local schools are taking into account not only local ability but also federal grants; and localities are developing their own educational programs with both unrestricted local funds and restricted funds from varied and numerous federal and state distributions. This Conference dealt primarily with the social, economic, and political forces shaping this interdependency, and the tools such as programming-planning-budgeting (PPB) systems which assist in developing educational programs within these demands.

These Proceedings include Awards in School Finance Research. The eight papers in this section were selected from abstracts of research completed by recent entrants to the corps of school finance experts. The papers were judged on the basis of the need for research on the topic, the research design, the size of the task undertaken and completed, and the research talent demonstrated. The judges were Dr. Forrest E. Conner, Executive Secretary of the American Association of School Administrators, Dr. Glen E. Robinson, Director of the Research Division of NEA, and Dr. William D. Firman, Assistant Commissioner of the New York State Department of Education.

The almost 400 persons who participated in the Conference represented local school systems, state education departments, the U. S. Office of Education, local, state, and national associations, and university professors of school administration and finance.

The Committee acknowledges the support of Dr. John D. Sullivan, NEA Assistant Executive Secretary for Information Services; and Dr. Glen E. Robinson, Director of the NEA Research Division. The Committee also extends its appreciation to the staff of the NEA Research Division who organized the Conference and prepared the Proceedings for publication: Eugene P. McLoone, Assistant Director and NEA Staff Contact for the Committee; Gaye Baber, Conference Coordinator; Beatrice C. Lee, Publications Editor; Ann Rossilli, Elizabeth Moffatt, and Patricia Zimmer, secretaries; Valdeane Rice, Administrative Assistant, and Wally Anne Sliter, Chief of the Typing-Production Section.

William D. Firman, Chairman
NEA Committee on Educational
Finance, 1967-68

Greetings from the National Education Association

John D. Sullivan
Assistant Executive Secretary for Information Services

THIS HAS BEEN A YEAR of turmoil in education, and much of the turmoil has been the result of organized activities by members of the National Education Association and its state and local affiliates. It is an unusual year in that much of the collective action has been directed at state legislatures.

In Florida, 30,000 teachers and administrators resigned en masse to protest the fiscal action taken by the governor and the state legislature. In New Mexico, 12,000 members of the New Mexico Education Association staged a state-wide walkout in a battle with the governor and the state legislature. In Oklahoma, 16,000 teachers engaged in a one-day protest meeting. In Pennsylvania, 20,000 teachers marched on the state capital. Idaho and Colorado have just declared state-wide sanctions because of inadequate and inequitable school financing. Our investigations and reports indicate that New Hampshire, Delaware, Indiana, Kansas, Arkansas, Arizona, Wyoming, and Alabama are all heading for a "showdown" with their state legislatures, mostly on general school finance, but in some cases on teacher salary programs.

In addition, the number of teacher/school board impasses over local school district contracts are so numerous in some states that the solution may be found only through a major change in state financing of schools.

The depth of feeling in this protest is evident not only from the amazing act of 30,000 Florida teachers actually signing and submitting resignations, but also from the nine-day strike by relatively well-paid teachers in affluent Montgomery County, Maryland—to say nothing of the nationwide attention given the walkout by the only teacher on Matinicus Island, Maine.

Is financial aid to schools the problem? How can it be a problem in Montgomery County, Maryland? Why Florida and not Mississippi?

Financial aid to schools is the problem. The amount is usually a significant factor, but the root of dissent seems to be one of equity—raising the amount of school aid temporizes with the situation, but equitable distribution is a crucial issue. And, of course, equitable in whose eyes? Thus, the Montgomery County teacher, while well paid compared with other teachers, is relatively poor in his own community. The Florida teacher works in the playground of millionaires. The urban teacher fights downtown traffic, teaches in the state's oldest, most decrepit buildings, works with large classes of emotionally, physically, and culturally handicapped children, while observing his suburban colleagues not only being better paid, but working under much more favorable conditions.

Can a formula be devised for equitable distribution of finances or will local teacher power create its own formula? Will the justified impatience of teachers, tired of studies without action, result in continued collective action against state legislatures and, I believe, in its time and place, against the Congress? If so, what fiscal policy will result? If there was ever an urgent time for interdependence, this is it. Teacher organizations, local governments, and state and national legislatures should be well advised in fiscal matters as a general rule, but particularly when operating under *heat,* lest in solving the immediate problem, they create serious unrecognized long-run fiscal problems. This is one challenge facing all of us.

A second major challenge to interdependence in school finance—the city, the state, and the nation—is that raised by decentralization of large urban school complexes. What fiscal policy should be adopted to support the new school district? If a budget reflects the philosophy of a school district, how may a truly autonomous school district within a city have some budgetary freedom to express its philosophy?

Finally, I hope that one of your national conferences will have a section meeting devoted to teacher organization finance. We are in big business as is evidenced by our commitment of $2,000,000 to Florida teachers. If these crises continue, we shall need more than the current revenue program. Perhaps we need the equivalent of the World Bank for our organizations. If you have some ideas on this subject, the National Education Association would appreciate getting them. In the meantime, if you haven't paid your dues, we will be glad to have your ten dollars. It will help our balance of payments.

Greetings from the National Education Association and best wishes for a successful conference.

Interdependence in School Finance: The City, the State, and the Nation

H. Thomas James

WHEN I COMPLETED my study of financing education in the great cities[1] two years ago, I concluded that most of our large city school systems find themselves in a bind financially. Their tax bases are growing too slowly, and in some cities actually are declining in value, at a time when new demands for improving schools and other government services are being made by the changing populations of the cities, by the burgeoning school population, and by the state and national governments. New federal money is doubtless helping the situation, but not enough to reassure the dark prophets of impending catastrophe. In some instances the federal money actually has had a negative effect, for state legislators and local voters frequently withhold appropriations to schools that might otherwise have been made on the argument that the federal money is sufficient. Yet clearly it is not sufficient, nor are the combined efforts of all levels of government sufficient to reassure those who see trouble ahead.

Local taxpaying ability continues to be the most important determinant of social policy for education in all our cities, and the targets being set for school improvements are thereby held to disastrously low levels in most cities. Defining a larger role for the federal government in the financing of education that will compensate for weaknesses in local and state jurisdictions is our best hope for guarding against disasters that now threaten in dozens of cities. Social policy must determine, rather than be limited by, the resources to be allocated to education, or we face a rising tide of troubles. Congressional recognition of that fact seems to me to be a beginning, but only a beginning, and we still have not even a beginning for the development of a broad national policy for the improvement of education.

Recently I completed two other efforts: One was the decennial review of school finance studies for the forthcoming *Encyclopedia of Educational Research,* and the other was a chapter for the October 1967 issue of *Review of Educational Research* entitled "The Politics and Community Decision Making in Education." It is out of the freshness of these experiences that I have ordered the thoughts I

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[1] James, H. Thomas; Kelly, James A.; and Garms, Walter I. *Determinants of Educational Expenditures in Large Cities of the United States.* U.S. Department of Health, Education, and Welfare, Office of Education, Cooperative Research Project No. 2389. Stanford, Calif.: Stanford University, School of Education, 1966. 198 p.

Dr. James is Dean, School of Education, Stanford University, Stanford, California.

bring you today. I am convinced that the educational programs at the local, state, and national levels are indeed interdependent, and that the political terms by which this interdependence comes to be stated in the years ahead will have important consequences for the welfare of our people.

As I have worked at my studies of school finance over the past several years, I have entered into a great deal of correspondence with researchers in the field and with policy-makers at the national, state, and local levels. I find from this correspondence that while we have few people skilled in assessing trends, we have no shortage of advocates in education. What I was receiving from most of my correspondents were proposals for ways of ordering the future, prophecies of hoped-for courses of events, statements of self-fulfilling hypotheses that the authors would nurture. I am sure there were equally dedicated prophets and hypotheses-makers of quite different persuasion than my correspondents, who can be expected in the years ahead to be equally diligent in opposing the view of those I consulted.

Since I am not a prophet, I cannot bring you today a blueprint for the way we shall order the interdependencies and responsibilities for educational services tomorrow among cities, states, and the nation. What I shall attempt to do in this paper is trace some of the insistent demands for educational services articulated at the several levels of government, for I believe these demands will have important influences on the ordering of educational priorities, and on the ways to finance them.

I must leave out of account, of course, those unforeseen consequences of coming events that may be as forceful in their impact on school policy as are those still flowing from Sputnik, the civil rights movement, and the reapportionment of state legislatures. We can, of course, extrapolate and see that far-reaching effects can yet be expected from these three events, for their effects on our school systems have by no means been fully felt. I chose not to do that today, because the education journals and other sources are rich in such extrapolations. Rather, I shall deal with what appear to me to be sensible extrapolations from positions now being taken by the President, the Congress, state governments, and local school districts that seem to me to have some rather clear implications for the immediate future of education.

The Federal Position

The first of these to be considered is the federal position. I think we can expect not a great expansion of the federal role in education in the coming session, but rather an extensive reappraisal and consolidation of present efforts. During the past year I have seen quoted in widely different contexts a spokesman for the Bureau of the Budget, a Congressman, and a leading columnist, all expressing themselves in almost identical language on the probability that the Congress would pause to assess the disorder represented in 170 grant-in-aid programs in 21 different federal departments and agencies operating through 92,000 units of government throughout the 50 states.

This remarkable disorder arises not out of a clear Congressional policy for education, but rather out of a lack of one. The Congress is faced with overwhelming evidence of national needs for improvement of the educational efforts of this nation, evidence that poses a threat to national order and therefore to national security. In the face of this evidence, the Congress has yet to generate a national policy for education. Besieged with so many advocates of courses of action, it seems simply to have thrown up its hands and appropriated money for supporting any good idea that could be advanced throughout the vast educational establishment, in the general hope that ways can be devised to exploit any breakthrough that is achieved, and to promote any line of experimentation that holds promise.

The system of project proposals was patently unmanageable under the original arrangements, and if continued, it would have swelled the flood of demands already rising to alarming levels to reduce the involvement of federal officials in the administration of state and local school systems. A period of consolidation of effort is now under way, and we must wait to see how far it will go.

Clearly the regional educational laboratories are making an impressive impact, and in their close association with the research and development centers in universities are starting a promising ferment in the educational establishment.

Of all the popular and professional support we have for the new federal programs, that for the preschool programs seems to be highest; preschool programs appear to be the brightest hope we have for improving the chances of the underprivileged child. Yet the prospects for institutionalizing and extending these programs seemed brighter a year ago than now; under existing law, public schools often are seriously hampered in extending services to children younger than five years, and teachers and taxpayers are often less than enthusiastic about the development of a new, and perhaps competitive, sector of public education.

The impact of the civil rights movement on the school, too, is changing. The demands, once so vociferous, that the schools be used as the principal social instrument for integrating the races is declining. Recent studies, notably James Coleman's,[2] emphasize the greater impact of other agencies and institutions in socializing the child. The civil rights movement may well founder if it fails to mobilize more broadly all of our social institutions, for to depend solely on the school for furthering that movement is to expect too much of the school, and will damage its usefulness in its historic function of helping all children to equip themselves for life in our society.

I have taken a rather circuitous route to the conclusion that no clear picture of the federal responsibility emerges from demands for improvement of education now being articulated at the federal level. The recent record reveals only an overwhelming sense of urgency that something must be done, and done quickly, to improve the capabilities of American educational institutions, and to prevent a disorderly scrambling for viable ideas in the absence of a clear federal policy for education.

A historical perspective is perhaps more useful in forecasting the long-term federal position in the interdependent relationship expected to develop. Over the long run, for instance over the last century, the position of the federal government in education seems much clearer than in recent years. Actually, the federal position is easier to define, and more clearly set forth in law over the last century than either state or local positions.

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[2] Coleman, James S., and others. *Equality of Educational Opportunity*. U.S. Department of Health, Education, and Welfare, Office of Education. Washington, D.C.: Government Printing Office, 1966. 737 p.

Over this long period the Congress has concerned itself with the investment aspect of education, with training manpower and improving technology so as to increase the general productivity of the nation and to strengthen its capabilities for accomplishing national purposes in peace and in war. These concerns for manpower training and technological improvements are traceable through the land grants to colleges of agriculture and mechanics during the Civil War, then through establishment of vocational schools, and more recently, through improvements of courses essential to work in the technological world we live in, such as mathematics and science. One might add, of course, the clear evidence of recent years that the Congress hopes the education industry will at long last give some small attention to the industrial revolution, and so encourages efforts to substitute technological innovations for the high-cost personal services that now absorb the major share of educational expenditures.

The steady persistence of demands, from the federal level particularly, for evaluation of educational programs in ways that direct attention to possibilities for substitution of more efficient ways of accomplishing our purposes is likely to have two important consequences for financing education.

First, we may expect an impact on instruction through the forthcoming efforts to assess our educational output. I think we are approaching the day when we can recognize that the greatest differences among schools are best illustrated by the social values they teach; by contrast, we are developing a remarkable consensus on the commonalities of knowledge we want taught, particularly in the areas of the sciences, mathematics, and perhaps languages. I believe it may be possible to develop national policies and curricula in these areas, leaving the more value-sensitive social and humanistic studies to state and local determination. The sophisticated approach to the measurement of the national educational product, worked out by Ralph Tyler and his advisors, may point the way to better understanding of how we can improve our educational product and still preserve a large measure of our pluralistic social values.

I expressed the hope some months ago that the effort to measure our gross educational product might be undertaken by the Education Commission of the States. If not that body, then I hope some other agency can be persuaded to undertake the assessment, for I am sure that the needs of education will be richly rewarded, not by stronger pressure groups, but by popular support for realizing opportunities that are now being foregone and for averting disasters that are almost upon us.

A second consequence of the persistent demands for evaluation of education can be expected to have an important impact on the fiscal processes and decisions in education. This consequence is traceable to a new priesthood that is being consulted about allocations to education. I refer to the economists' increasing interest in education, and to the methods they use to analyze educational affairs, such as cost-benefit analyses, systems analysis, and program planning and budgeting systems.

It is possible, of course, simply to dismiss this movement as a recurrence of the activities associated with the cult of efficiency that was rampant in school affairs half a century ago, with the unhappy effects for education outlined so vividly by Callahan.[3] Or one can conclude, as I suggested earlier, that since a new priesthood is in power in Washington, we have a new catechism to learn, and so dismiss it as ritual. However, I am inclined to think we cannot dismiss this movement lightly, first, because this time it emerges with a much broader intellectual undergirding and logical sophistication, and second, because politicians are seizing upon it as a means for controlling school costs that have risen steadily throughout this century at a rate faster than that at which the total economy grows. Therefore, I will argue for knowing more about the movement, its assumptions, its methods, and its objectives.

A first step to such knowledge is to recognize a hierarchy of complexity in the new methods. Cost-benefit analysis is the simplest component, systems analysis is a more complex process, and program planning and budgeting systems are the most complex. Comprehending the intermediate steps is one way to easier acceptance of the implications of program planning and budgeting systems, for schoolmen are already engaged in many places with some level of cost-benefit analyses on some parts of the total school operation in many school systems, more recently in negotiating for new federal program funds; but in the past, too, some fairly sophisticated cost-benefit studies were done in such areas as transportation and food service, though often with a too narrow frame of reference and with haphazard methodology.

Let me summarize the federal position on the forthcoming interdependent relationship for financing education as follows: first, continuing and strengthening traditional federal concerns for improving the labor force and for encouraging technological development, to the end that national productivity increases and improves the general welfare; second, assessing the educational product of the nation and seeking ways to improve it, especially in areas critical to economic productivity, such as science, mathematics, and perhaps languages, with national policy and perhaps national curricula being supported and diffused in these areas with federal funds; and third, continuing concern for efficiency in education, particularly as cost-benefit studies reveal ways for substituting technological innovations for expensive personal services in accomplishing educational purposes.

I might add that we can expect the Congress to continue to search for ways to prevent states and localities from allowing federal funds to substitute for funds that might otherwise be appropriated at state and local levels, so that federal funds are actually used for improvement of education, and not for tax relief at other levels of government.

The State Level

I turn now to consider the state level, and to see if the demands made at that level suggest how the state will fit into the emerging interdependent relationship for financing education.

The state laws and constitutions are curiously silent on the investment aspects of education, or manpower training. As with the federal government, one can become bemused with current proposals, many of which simply reflect national or local anxieties; but over the long run, again one can discern a pattern. The acts of state legislatures reveal a preoccupation with two sets of concerns, one having to do with the enforcement of minimum standards of educational programs and personnel, and the other set of concerns having to do with the equalization of educational benefits, and the tax burdens that support them. Both of these sets of concerns generate powerful pressures toward centralization of educational decisions and administration. Those that deal with standardization of programs and personnel have been driving curricular decisions to the state level, and increasingly decisions on salary scales and conditions of employment as well. The concern for equalization also encourages centralization, primarily because more than half of the costs of education have rested on archaic tax structures, mostly property taxation, which were frequently badly and occasionally scandalously administered. The most common result of this arrangement is that the schools most in need of improvement have been least able to afford it.

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[3] Callahan, Raymond E. *Education and the Cult of Efficiency.* Chicago: University of Chicago Press, 1962. 273 p.

Through much of the first half of this century, states have been distributing state-collected revenues inequitably in order to compensate for inequalities in property tax revenues. More recently states have been moving into supervision of property tax administration. It now appears likely that more states will be driven by increasing teacher militancy to underwrite state salary schedules for school employees. A logical next step will be direct state administration of property taxes to help pay the costs, and abandonment of the bureaucratic wonderlands we now have for equalization under such euphemisms as the foundation program.

If the teachers' salaries are shifted to the states, it seems unlikely that the states would continue to share the residual costs with local school districts on a formula basis.

Some states are already finding it feasible to appropriate funds for schools on the basis of financial needs as revealed by the analysis of the budgets of individual districts, and a great many more states now have reduced the number of districts sufficiently to begin doing so. The number of school districts continues to decline, is down now to 21,704 from the peak of 127,422 in 1930, and is expected to stabilize at 5,000.

The use of a formula for allocating school funds has always been a substitute for knowledge about the budgetary needs of the school, once too difficult to obtain on a district-by-district basis. Now, however, most states have a manageable number of districts; adequate technology for data collection and data reduction is increasingly available; and a promising revolution in accounting and budgeting already is under way. It is perhaps time to lay aside our primitive substitutes for knowledge, and deal directly with information about the financial needs of each school district.

Many legislatures make appropriations to institutions of higher education on such an informed basis, and have done so for years. There is now little reason for them to continue to deal blindly with appropriations to the public schools. Better information on the needs of schools is likely to increase appropriations over those now being made on a ritualistic and often unpersuasive formula basis. Many of the large city school districts already are operating outside the regular state aid formula, and some for years have gotten their state appropriations through direct negotiations with the legislature and the governor.

In summary—I have identified the probable state position in the forthcoming interdependent relationship for financing education as follows:

1. Continuation of the traditional concerns for enforcing minimum standards for educational programs and personnel and for equalizing the benefits and burdens of school expenditures
2. Further yielding to the pressures for centralization of educational decision-making and administration with more decisions on curriculum, materials of instruction, probably teachers' salaries, and perhaps school taxes on property, moving to the state level
3. Gradual abandonment of school aid formula, such as foundation programs, as new accounting and budget technology and methods increase the flow of information that is needed at the state level to make rational judgments on the financial needs of local districts.

The Local Level

Now you may ask, with federal policy governing production-oriented investments in education, broadly defined, and state governments controlling much of the rest of the curriculum, determining salary and the conditions for employing of teachers, and perhaps taking over budget decisions, and property taxation as well, how can we see a place for the local unit to enter significant policy-making and be involved effectively in financing education? I will argue that there is such a role for local government, especially in city school districts, and that it is a role of critical importance. Furthermore, the role I see is not one to be created, but one that has been emerging for a long time; I simply bring it to your attention in ways not common to current textbooks on school administration.

The most important reason for assuming an important place for local decisions in school affairs is that the history of schools in this nation is characterized by pervasive, almost obsessive, localism in school policy. This observation is supported by all our written history of education, and is emphasized for me by a three-year study of school boards I recently undertook with support from the Carnegie Corporation. In these studies we noted evidence of rising tensions surrounding the functioning of local boards of education. Much of this tension was building up because the functions and functioning of school boards are changing, while public understanding of their functions, and even the understanding of many school-board members, has not changed.

During the last half century we have seen the powers of boards of education eroded by a growing body of universalistic policy generated at the state and national levels, not only in government, but in voluntary professional and school-board associations as well. As the body of universalistic policy has grown, the traditional policy or rule-making function of the board has gradually shifted to application or adjudication of policy or rules made elsewhere, in which boards mediate the terms for applying general policy to local circumstances.

I noted above the sharp decline in numbers of school districts, and therefore in numbers of board members.

Yet while boards have declined in number and changed in function, they find themselves relatively unprotected by universalistic policy, and increasingly involved, because their declining numbers concentrate the fury of their involvement in some of the most fundamental conflicts in our society. Religious antagonisms account for the oldest and most persistent conflicts over schools in this society. Racial antagonisms, probably second in age and persistence, are the most explosive issues facing school boards today. In addition to these conflicts, school boards are increasingly confronted with conflicts based on economic issues. The poor are learning that education is important to economic success, and this awareness is generating conflicts as explosive as the religious or racial antagonisms because of their potentially revolutionary effects on the economic, social, and political order.

The management of conflict, such as that generated by the demands of individuals and groups just referred to, is the business of government, and, indeed, is the main reason for the existence of government. Local boards of education perform a useful function in the maintenance of social order by holding hearings on the demands, resolving conflicts, where they can, in ways that are reasonably satisfactory to all, and where they cannot resolve the conflict, they can aggregate the demands and articulate them as demands for support from higher levels of government.

Presumably many of the demands for financial support formulated by city school boards will be appropriately directed to the Congress, on grounds that urban populations are mobile, and the national interest dictates large expenditures for improving pools of potential manpower which may not benefit the local economy in the short run, but will benefit the nation in the long run. Certainly this argument is viable now for the many large cities, virtually immobilized by one of the greatest migrations in human history, and is viable as well as an argument for large national allocations for education to rural areas from which millions of migrants will continue to come.

Other demands will be directed appropriately to state legislatures, on grounds that urban education is now frequently inferior to that provided in other areas of the state, and can be improved only by meeting the higher costs of urban education and equalizing the enormous overloads on urban tax bases resulting from educational and many other costs borne by cities in order to serve surrounding suburban areas.

Other demands may be appropriately directed to city government and may in the long run be expected to revolutionize educational organizations in the city, for we are relearning a lesson taught by Plato, which we only half-learned when John Dewey retaught it, that the city itself may be the most efficient teaching machine. Instead of building our city schools to look like jails, and operating them much as though they were, there seems to be hope that we can reduce the century-long emphasis on the school as a custodial institution, and begin involving the children in many and complex ways in the potentially great educative experience of life in the city. That part of the educational program that is essentially cultural, that relates to social values, that uniquely transmits the cultural heritage of a given city or community, and that, we hope, will permit us as a nation to perpetuate our pluralistic and wonderfully heterogeneous perceptions of the purpose of life and how to benefit the human condition, must fall on local government, for it is being attended to at no other level.

In summary, I see the emerging role of local school boards as:

1. Mediating and adjudicating the terms and conditions under which the growing body of universalistic policy for education generated at state and national levels, both in government and in professional associations, is applied in the local situation

2. Articulating demands on the governmental units at city, state, and national levels for meeting educational needs in the district (and for this purpose we may want to increase the number of agencies with power to hold hearings, perhaps to include community councils or advisory bodies for every high-school attendance area, or perhaps even for every attendance center)

3. Attending to the task of cultural transmission and the preservation and enrichment of the social and humanistic values of importance to the clientele of the schools. For accomplishing this purpose, local boards, of course, will need to retain a legitimate claim on taxable resources within the district.

How, one might ask, might these responsibilities be distributed in terms of proportion of the tax revenue to be contributed? I have no way of answering that question, because it, above all others, is to be resolved in the political arena. I think that arguments for viewing education as an investment that yields predictable returns to the economy will cause federal allocations to increase, perhaps to a fourth of the costs before the end of the century. If salary negotiations are moved to the state level and the states underwrite teachers' salaries, perhaps half or more of the costs will be raised at the state level. The local share of costs will then vary depending upon how congruent local demands are with state and national aims, upon how persuasive local boards are in getting support for their peculiar needs from city, state, or national treasuries, and upon the demands and capabilities for supporting those parts of the school program unique to the local district.

Where local apathy or poverty reduces the local share, we will be assured of minimum programs continuing to contribute to state and national aims, with some falling off of efforts to maintain local social and cultural characteristics; one can argue that such circumstances would contribute to sound social policy on the grounds that the transmission of social values which contribute to apathy and poverty probably should not be encouraged.

On the other hand, communities rich in material resources, that are insistent and persuasive in their demands for transmission of their social values will find the means to accomplish their purposes, and this, too, would seem to fit into a sound social policy for education. One can wonder about materially rich but apathetic communities, which would surely wither, or materially poor but culturally dynamic communities, which could be expected to breed revolutions. I have left such communities out of account in this paper, not because speculating about them might not be interesting, but because the paper is already too long.

Making Your Own Circumstances

Ralph W. Yarborough

THIS AFTERNOON I INTEND to talk broadly about the federal role in the financing of elementary and secondary education, and the implications of that role, and to make some suggestions about where we should go from here and how we should get there.

I am not breaching any secrets of state if I observe that there are two conflicting philosophies concerning federal aid to education—categorical aid and general aid. One of the fundamental tenets of the National Education Association is that aid to education be general, with the exception of broad national programs such as research and development. Give block grants to states and let them decide how to spend the money.

Although the House amendments to Title III of the Elementary and Secondary Education Act last session of the Congress moved in this direction, I think it is safe to say that it will still be a while before the Congress moves much farther in the direction of general aid.

There is a good reason for this. There is a doubt on the part of a good number of members of the Congress that, at the present time, we should move to programs of general aid. Why? Because, with the exception of a sprinkling of states, some think that there is not enough proven experience at the state level to wisely administer billions of dollars in federal money. Most states have small populations without enough state resources to build strong state departments of education.

That is why Title V of the Elementary and Secondary Education Act was passed—to aid state departments of education, to help them invigorate and strengthen their abilities and their capacities. Now we could take some time debating this—the House of Representatives spent several days on it, and we took several days more in conference committee to reach a compromise on Title III.

The point is, whether we agree with it or not, categorical aid is reflective of the mood of the present Congress. I say this because I think many of us in the Congress agree with you that in the best of all possible worlds we should have general aid to education. We agree with you that the states should be in a better position to assess needs and allocate resources at their level than is the federal government. But this is not, as yet, the best of all possible worlds.

The issue, then, seems to be: What can the state and local educational agencies do to establish themselves as

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the most appropriate receptacles for federal funds? I suggest that the most important thing for them to do is to take the initiative, to work with what they have, and to show that they can do the job of educating their children that must be done.

I agree with what George Bernard Shaw wrote: "People are always blaming their circumstances for what they are. I don't believe in circumstances. The people who get on in this world are the people who get up and look for the circumstances they want, and if they can't find them, make them."

In other words, just because 8 percent of the local educational budget nationwide comes from the federal government is no excuse for sitting back and abdicating responsibility or initiative—for taking federal money with one hand, and with the other hand writing an essay decrying federal control of education. I suggest that, first, there should not be federal *control* of education; second, by your diligence and handling you can determine the extent of such control.

This is an age of change—an age when the big word in education is *innovation,* almost to the point of change for the sake of change. Recently an assistant superintendent of the District of Columbia school system said that his schools were getting millions of federal dollars for innovation, that they were going to have an innovative dropout program, an innovative reading-readiness program, an innovative curriculum research committee, and even innovative innovations. Finally he said that he had been trained by the Jesuits and concluded that "they haven't had an innovation in their curriculum for 400 years, and their education is not noticeably inferior to anything else that's going on today."

I think we all have to be careful about change for the sake of change. But, at the same time, it is obvious that change is needed not only at the state and local educational agency level, but also at the level of the state legislatures. In each of these instances there has been an abdication of responsibility, an unwillingness to put on the tax bite to improve education.

Two years ago Professor Philip Hauser of the University of Chicago observed: "Boards of education have failed miserably . . . and too often the only criterion of success was that they kept the tax bill for education low. In this respect, and this goes for the state legislatures as well, there has never been a greater form of economic idiocy than that which has resulted in our saving millions of dollars in educational expenditures in the schools, and then spending hundreds of millions of dollars to mop up the failures of the school system."

And that, it seems to me, is what the argument between general and categorical aid is all about. The operation of the federal government in education today is a rescue mission; or, to use language which the war in Vietnam has made popular, a "search and destroy mission," except that you don't have to look very hard or very far to find educational deficiencies in America today.

So: Where do we go from here? How do we get from here to general aid?

It seems to me that certainly at the national level, NEA has done an admirable job of effecting change and improvement. Your legislative branch is a smooth and sophisticated operation. It was thanks to the NEA, for example, that I was made aware of the need for special programs in bilingual education. And so, thanks to the impetus of the NEA, we now have the bilingual education act, Title VII of the Elementary and Secondary Act (a categorical aid program).

It strikes me, though, that you could be doing, and should be doing, a lot more at the local level to achieve the change in education we all want so desperately—the change that will make general aid to education a reality.

And all this leads us to another question. Just where are the hard spots in achieving change. A fascinating study sponsored by the Kettering Foundation and run by the Gallup Poll people reveals some answers.[1] Let me quote at random from the findings of the report: All three groups—parents, school-board members, and administrators and teachers—are prepared to accept change. Prestige lies clearly on the side of accepting change. In each instance, those questioned said that resistance to change was greatest in other groups. "The great ogre, and enemy of change is sometimes quite nebulous—'the general public' . . . . Undoubtedly, the bad reputation of the 'general public' arises from the difficulty of getting school bond issues voted. Those members of the community who have no children in the public schools all too often oppose school expenditures that increase local taxes. Since innovations often require more money for teachers and equipment, it is assumed that changes requiring more tax dollars will be opposed by many members of 'the general public.' "

The impressive thing about the report is that which is not stated, that everybody is passing the buck, and that most important change—improvement—is not taking place.

In his inaugural address, John F. Kennedy said: "I do not believe that any of us would exchange places with any other people or any other generation. The energy, the faith, the devotion which we bring to this endeavor will light our country and all who serve it—and the glow from the fire can truly light the world."

It is you and all of the teachers you represent who can, through education, light the world. It is my hope that the NEA will use its talents and its influence at the local level to attain the goals of quality education. For certainly, until we senators and representatives see some signs that we can ease our watchfulness over the pursestrings, we are not going to do it. In short do more of what you are doing. Your purpose at this 11th National Conference is to effect change. As you do so, bear in mind the words of Shaw:

"The people who get on in this world are the people who get up and look for the circumstances they want, and if they can't find them, make them."

And in making these circumstances, let us strive to set such an example of fairness and justice to all peoples that men through all generations will say of Americans: "They had a divine spark of fairness and justice and greatness."

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[1] Gallup International. *Administrators' and Teachers' Reactions to Educational Innovations.* Sponsored by the Charles F. Kettering Foundation. Princeton, N.J.: Gallup International, May 1967. p. 7.

Modernizing State School Finance Programs: Six Selected Areas

Eugene P. McLoone

FROM A SOCIAL viewpoint the task of modernizing state school finance plans is clear and formidable. From economic and political viewpoints it is no less clear.

Social Viewpoint

The Kerner Commission Report states that America is running the danger of becoming two separate societies, one white and the other black.[1] Mort and Cornell's old studies of adaptability, especially *American Schools in Transition,* indicate that social class plays an important role in amount of education received.[2] *Elmtown's Youth* gave the same warning; it was recently repeated in the Coleman Report.[3] The principal device of state school finance to alleviate these inequalities of geographic location of birth was and is the minimum foundation program.

The foundation program sought and seeks to provide equal access to the resources of the state for *all* children and thereby equal provision of educational opportunity to all. The compensatory education programs of such cities as New York and such states as California and Connecticut plus the Elementary and Secondary Education Act of 1965 by the federal government are postulated on the fact that not equal but unequal resources per child are necessary for equality of opportunity with greater provision of resources to lower socioeconomic class children and those children who have recently come to the city from a rural culture.

Economic and Political Viewpoints

The growth of the gross national product during 1968 will equal almost

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[1] Office of the President. *Report of the National Advisory Commission on Civil Disorders.* Washington, D.C.: Government Printing Office, March 1968. 426 p.

[2] Mort, Paul R., and Cornell, Francis G. *American Schools in Transition.* New York: Teachers College, Columbia University, 1941. 546 p.

Corwin, Ronald G. *A Sociology of Education: Emerging Patterns of Class, Status, and Power in the Public Schools.* New York: Appleton-Century-Crofts, 1965. See especially Chapter 6, "Social Class Influences on the School System," p. 155-90, for a review of related literature.

[3] Hollingshead, August de Belmont. *Elmtown's Youth: The Impact of Social Classes on Adolescents.* New York: John Wiley and Sons, 1949. 480 p.

Coleman, James S., and others. *Equality of Educational Opportunity.* Washington, D.C.: Government Printing Office, 1966. 737 p.

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$60 billion, almost double the spending on elementary and secondary schools. Yet, public elementary and secondary schools continue to face a crisis of funds sufficient to their needs. School property taxes, the continued mainstay of local support, had leeway five and 10 years ago. Today in many states and communities, property taxes, which almost always are considered too high subjectively, are reaching burdensome levels measured objectively.[4] Increasingly, new funds for schools come from the states, and some of these funds are expressly for property tax relief. Finding their revenue levels inadequate to meet not only direct state expenditures but also grants to local governments, states increasingly are adopting new taxes and increased tax rates. Five-sixths of the growth in state tax revenue from 1962 to 1967 came from the responsiveness of state taxes to a growing economy and only the remaining one-sixth came from deliberate legislative action. Recent tax enactments mean that more of the growth in state revenue in the near future will result from this fact.

As more and more states levy both a sales and an income tax state-wide (30 states as of January 1, 1968), the question of state government finance is no longer which broad-based tax the state should enact, a sales or an income tax; the question becomes what tax system should the state have for itself and its local governments. Also, the question of which tax sources the state should tap and which local governments should tap to reduce overlapping governmental use of tax sources becomes this question: On which state taxes will local piggy-back rates be allowed?

Local nonproperty taxes are no longer viewed as a solution to local fiscal problems, although they are for some local governments and some local government services. However, for most local governments and most functions, permission to levy local nonproperty taxes does not match service needs with tax resources. Instead of the imbalance being that between local governments with high property valuations and low service needs and other governmental units with low property valuation and high service needs, the imbalance becomes one between governmental units that are sales centers and governmental units that are not, and between those that are areas of high-income individuals and those that are not.

Permission to levy local nonproperty taxes does not correct the imbalances; it merely changes the governmental units among which the imbalance of service needs and tax resources exist. Thus, there is a growing recognition that state governments must use grants to local government to correct mismatches of needs and resources.

Specified Areas for Modernizing

The request for this paper specified six areas of state support programs that should be treated. These six areas seem to raise questions about the form of state support. This they do but, in addition, they raise a larger question about the amount of state support. Thus, two basic questions of state support are raised: (a) *How much* should state funds be? and (b) *What form* should state distributions have? The six areas are the provisions in state laws for (a) municipal overburden; (b) encouragement of school district reorganization; (c) local leeway limitations; (d) state administration of the property tax; (e) minimum salary schedules; and (f) equalized percentage matching (EPM) grants or, in other words, open-end state support instead of a fixed amount as a ceiling.

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[4] U.S. Department of Commerce, Bureau of the Census. *Property Tax Rates in Selected Major Cities and Counties.* Census of Governments 1967, CG-P-5. Washington, D.C.: the Bureau, May 1968. 13 p. A rate of 3 percent on full value has long been considered objectively too high.

An EPM grant is the accepted basic form for distribution of funds in state support plans. The traditional Strayer-Haig model is a special case of EPM grant in which there is a fixed amount per pupil and a specified local property tax contribution rate which local school districts must levy to participate. Wisconsin in 1949 first moved to a special type of EPM grant for school districts with per-pupil property valuations below the state-wide average. Rhode Island adopted a full EPM grant later. California, Massachusetts, and other states have followed in adopting an EPM for some or all districts.

Equalized Percentage Matching (EPM) Grant

Essentially, an EPM grant specifies the state and local sharing in educational costs and pursues equalization of potential. Unlike the special Strayer-Haig case which sets an upper limit to state liability for support, a completely open-end EPM, as in Rhode Island, leaves the extent of the liability of the state to the action of local school districts. This has led to the major argument against an EPM grant: It provides a blank check on the state treasury. The state continues to share its percentage of cost as local school district expenditures rise or fall. The state share for any district varies according to the need and the ability of the school district. Each school district nonetheless has its own percentage share that the state will provide.

In other words, if the state supports a $500 per-pupil program for 5 mills, a school district with that levy and 50 percent of its expenditures guaranteed by the state, will receive $250 per pupil. If the district raises only 4 mills, a 20-percent reduction in effort, the state will still provide 50 percent or $200 per pupil. A 20-percent increase in effort to 6 mills would give a $600 per-pupil program with $300 per pupil from the state. Every district that makes a 4-, 5-, or 6-mill effort would have $400, $500, or $600 per-pupil program, respectively; that is, the state supports a level of expenditure equal to the effort of the local school district—the same expenditure for districts with the same effort but a varying grant as district tax effort varies among districts. The state share for any district thus varies according to the need and ability of the school district. Therefore, on superficial theoretical analysis, people have concluded that a completely open-end EPM grant without a ceiling on per-pupil expenditures would lead to a raid on the state treasury. Better theoretical formulations and the experience of the past decades have proved this conclusion to be faulty.

The missing elements in the theoretical EPM grant analysis were (a) the indirect local contribution rate, (b) the redistribution percent, and (c) the bargaining positions of local school districts and individual taxpayers. Aspects that received insufficient attention were (d) the index nature of the EPM grant and (e) the determinants of the over-all state percentage of funds in an equalization grant. The last two will be discussed first because they have been fully developed elsewhere by others.

The State's Share in an EPM Grant

Cornell showed that the Strayer-Haig model was mathematically convertible to an open-end EPM grant of an index nature.[5] In doing so, he indicated that each district's share of total state appropriation was the difference between (a) the percentage of total state need in the district and (b) the product of the percentage of total state ability in the district and the percentage established as the over-all local share. The local share and the state share add to 1.00 or full financing of the program. Cornell suggested the index approach for programs where the limitation on granting funds was the total appropriated as well as for programs where payments to local districts varied with local effort. Thus, Cornell clearly showed that a necessary condition for an EPM grant to become a raid on the state treasury is full financing by a state legislature, which through its appropriation process retains full control.

Benson expanded the Cornell index analysis to show that if complete equalization is the goal of state support, the percentage of funds from the state is determined solely by the variation in ability of school districts.[6] Benson [7] also showed that a state share above this equalizing percentage was desired by the more able districts, while a state share at or below the equalizing percentage was desired by less able districts. Benson indicated, in addition, that the over-all state percentage that would prevail in a state with an EPM grant was most likely the equalizing percentage.

The over-all state percentage would be above the equalizing percentage only when the sum of the ability of those districts exceeding the average program set by the state (the $500 for 5 mills in the example above) was greater than the sum of ability of those districts at or below the average program. Thus, Benson demonstrated that the percentage of funds provided by the state was not likely to increase substantially. Benson's analysis did not answer the question of how much state funds would increase. However, his analysis did indicate that a stable state share could be attained by an EPM grant if set at the equalizing percentage, which arises from variations in ability of school districts and is influenced mainly by school district organization and the changes in need and ability of school districts.

Studies by Benson and Kelly in Rhode Island and by Daniere in Massachusetts as well as theoretical analysis by Daniere and by Pauly [8] showed that an EPM grant would not increase educational funds much beyond that experienced in other states during the same period. In Rhode Island, state funds did increase faster than in other states; that is, state funds substituted for local funds without great increases in total funds for schools. Thus, one might claim or not claim that there was a raid on the state treasury. Before deciding, however, we need to examine the overlooked aspects of EPM grants.

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[5] Cornell, Francis G. "Grant-in-Aid Apportionment Formulas." *Journal of the American Statistical Association* 42: 92-104; March 1947.

[6] Benson, Charles S. *The Economics of Public Education.* Boston: Houghton Mifflin Co., 1961. p. 206.

[7] Benson, Charles S. "State Aid Patterns." *Public School Finance: Economics and Politics.* (Written by Jesse Burkhead.) Syracuse: Syracuse University Press, 1964. Chapter IX, p. 205-35.

[8] Pauly, Mark V. "Mixed Public and Private Financing of Education: Efficiency and Feasibility." *American Economic Review* 57: 120-30, March 1967.

Indirect Local Contribution [9]

The indirect local contribution exists mainly in the Morphet-Johns salary schedule state support model. It also exists in percentage of cost grants and similar reimbursement grants. This indirect local contribution, essentially funds that the local school district must raise before state payments begin, is initial or first-year funds exclusively from local sources. The EPM grants, as they operate in states, have this feature of requiring first-year funds from local sources. States generally use the previous year's expenditures as the basis for the current year's receipts from the state. Instantaneous payment on this year's budget is feasible with the computer, but may not be desirable for determining state revenue needs or of giving easier access to state funds.

The net effect of the indirect local contribution is to force the extension of the time horizon of local school districts beyond one or two school years. With a long-term view, they will see that eventually less effort will provide the same expenditure level as long as the state does not change its distribution plan. If the state wishes to encourage higher spending levels, it will provide initial year funds to the least able so that they might invest in a higher expenditure level. Otherwise, the indirect local contribution becomes an effective barrier to great increases in spending by local schools.

Redistribution Percentage

The redistribution percentage arises from considering the net gains and losses of local school districts, taking into account not only the state payments to local school districts but also state revenue raised to make these payments.[10] In his theoretical analysis of grants, Musgrave showed that the state treasury acted merely as a collection and disbursement agency with regard to localities and that collections should equal disbursements.[11] Benson showed that if the state merely made the necessary redistribution among localities, it would handle the least amount of funds.[12] In a paper prepared for the National School Boards Association, I showed that the redistribution percentage is a result of the variations in need and ability among school districts; that is, while the equalizing percentage is determined solely by the range of wealth among districts, the redistribution percentage is influenced by the entire distribution.

The redistribution percentage indicates the least amount of money that a state needs to handle to achieve equalization. Depending on the school district organization, the redistribution percentage can be almost all or a small portion of the funds required for equalization. The higher the redistribution percentage, the greater the opposition to a higher minimum program or an open-end EPM grant as the losers have greater influence. The full impact of the redistribution

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[9] McLoone, Eugene P. "Evaluating the Weighting Factors in Use." *Trends in Financing Public Education*. Proceedings of the Eighth National Conference on School Finance. Washington, D.C.: National Education Association, 1965. p. 71-72.

[10] Benson, Charles S. *The Economics of Public Education*. Boston: Houghton Mifflin Co., 1961. p. 206.

[11] Musgrave, Richard A. "Approaches to a Fiscal Theory of Political Federalism." *Public Finances: Needs, Sources and Utilization*. A Conference of the Universities-National Bureau, Committee for Economic Research. Princeton: Princeton University Press, 1961. p. 97-133.

[12] Benson, Charles S. *The Economics of Public Education*. Boston: Houghton Mifflin Co., 1961. p. 206.

TABLE 1.—ILLUSTRATION OF GAINS AND LOSSES BY SCHOOL DISTRICTS UNDER STATE GRANTS

District	Percentage of pupils	Percentage of wealth	Ratio of wealth per pupil to state average	Amount raised per district if state funds equal:						Redistribution if state funds are limited:				
				Percentage of pupils:						Percentage of pupils:				
				100%	80%	60%	50%	40%	20%	100%	80%	60%	40%	20%
A	20%	40%	2.00	40	32	24	20.0	16	8	−20	−32	−24	−16	−8
B	20	25	1.25	25	20	15	12.5	10	5	−5	0	−15	−10	−5
C	20	20	1.00	20	16	12	10.0	8	4	0	+4	+8	−8	−4
D	20	10	.50	10	8	6	5.0	4	2	+10	+12	+14	+16	−2
E	20	5	.25	5	4	3	2.5	2	1	+15	+16	+17	+18	+19
State total	100%	100%	1.00	100	80	60	50.0	40	20					
Redistribution amount										−25 +25 0	−32 +32 0	−39 +39 0	−34 +34 0	−19 +19 0

$$\text{Redistribution percentage} = \frac{\text{Redistribution amount}}{\text{Total amount}}, \text{ for instance } \frac{25}{100}, \frac{39}{60}, \frac{19}{20}$$

$$\text{Equalizing percentage} = \frac{1}{2.00} = .5 \text{ from local, or local share}$$

$$1.00 - .5 = .5 \text{ from state, or state share}$$

percentage is seen only in the bargaining among local school districts.

Bargaining Under EPM Formula

On the assumption of a one man/one vote state legislature and equal distribution of children and total population, the five districts shown in Table 1 would have equal shares of voting in the state legislature. Strict equalization would result in the state providing 50 percent of the funds, and the localities, the other 50 percent. The state could achieve the same result by levying a full tax for the 100 percent. The losses of Districts A and B equal the gains of Districts D and E. District C remains even—it pays to the state an amount equal to that which it collects.

District C could join Districts D and E (or it could be District B who joins Districts D and E) so that it might also gain by not providing any state funds to the wealthiest district. District B would favor such a plan to eliminate its loss. Now the state needs to provide funds for only 80 percent of the pupils.

District A now suffers a greater loss, and if it seeks to reduce the loss, it will wish to have a smaller percentage of pupils covered. It will join any group that will still further reduce the percentage of pupils covered. Such a move will increase the loss to District B, and it will move toward the lowest percentage of pupils or back toward 80 or 100 percent. District A prefers 20 percent. Ultimately, the program may well settle on 20 percent as at that point Districts A, B, and C have least loss and District E, the greatest gain. District B would tend to favor 100 percent of the pupils now because it is even. In combination with Districts D and E, it might attain this position or the 60 percent position.

These hypothetical situations exist. The 100 percent of pupils illustrates any flat grant or a fully financial equalization grant. The Wisconsin state aid is a combination of a flat grant and a program covering approximately 40 percent of the pupils. The California basic aid is the 100 percent case; the equalization aid approximates the 60 percent case and supplemental aid approximates the 20 percent case. With appropriate data for the state, and a weighting of the distribution of funds by amount of total state aid in each fund, one could determine the distribution established.

Examining these distributors, one can see that available state funds more often than not become the crucial variable in determining the plan chosen. Like local school boards or municipal governments, states operate under a known revenue constraint. Under the fixed foundation program, expenditure levels can be raised only when state revenues are available.

James, Kelly, and Garms have shown that demand for education, ability of a community, and governmental arrangements affect the support for education with demand and ability being most important.[13] The EPM formula places all concern on demand as it makes all districts equal in ability, and it changes the governmental arrangements to purely fiscal tasks. Because fiscal tasks predominate, the influence of state departments of education is lessened. Such power and political considerations are beyond the scope of the present treatment.

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[13] James, H. Thomas; Kelly, James A.; and Garms, Walter I. *Determinants of Educational Expenditures in Large Cities of the United States.* U.S. Office of Education, Cooperative Research Project No. 2389. Stanford, Calif.: School of Education, Stanford University, 1966. 198 p.

TABLE 2.—BARGAINING IN STATE GRANTS

Education need of district	Relation of measure to state average		
	Greater than	Equal to	Less than
		Tax base of district	
Greater than state average	+ or −	+	+
Equal to state average	−	0	+
Less than state average	−	−	+ or −
		District wealth per pupil	
Greater than state average	< or >1.0	<1.0	<1.0
Equal to state average	>1.0	1.0	<1.0
Less than state average	>1.0	>1.0	< or >1.0
		Tax revenue of district *	
Greater than state average	+ or −	+	+
Equal to state average	−	0	+
Less than state average	−	−	+ or −

* Tax revenue equals tax rate times tax base. Average tax revenue is the sum of the tax revenue for all districts divided by the number of districts.
+ = District that gains from distribution
− = District that loses from distribution.
0 = District even.

As one can observe from Table 1, with a 100 percent equalization, the gains and losses are as indicated in the first part of Table 2. The second part indicates bargaining by districts according to wealth. The third part shows that under an EPM grant, bargaining changes from the ratio of a district wealth per pupil to the state average to the ratio of district tax revenue per pupil (or tax rate times tax base) to the state average. By comparing the third part with the first part, one can see that if all districts make the same tax effort, that is, the average tax effort, the Strayer-Haig model is a special case of the EPM with equal tax effort. One can make the comparison by changing the second part to the ratio of tax revenue per pupil of the district to the state average.

School districts and their taxpayers thus can determine their gains and losses. One way to reduce losses is to set a maximum foundation level. Another way is to restrict the percentage of pupils covered by the state foundation program. Wealthy districts can strive to bargain in either direction. Only a state-wide commitment to equal education will mean acceptance of an EPM grant and the granting of equal access to the state's resources to every child.

Truly Equal Access Only in EPM Formulas

Currently, the citizens of each district set an expenditure level for the children of the district. Joined with other citizens, they set an expenditure level for the state. These two decisions on expenditure levels—one for the district and the other for the state—are made independently. The state foundation level becomes either a floor or a ceiling. For wealthy districts willing to tax themselves heavily, the foundation level becomes a floor to be exceeded. For very poor districts, the foundation level is a ceiling that can hardly be exceeded, and becomes the first limitation on educational spending. For the poor districts spending only slightly beyond the foundation level, state limitations on local leeway become the second limitation on educational spending. Equally important, these state limitations also become a limitation on average and wealthy districts.

The EPM formula makes it possible to combine the decisions on state and local expenditure levels. All districts are encouraged to make an average tax effort. If a district spends less, it loses more. Thus, districts are equalized in spending and in tax effort. All districts making the same tax effort have the same amount to spend per pupil; that is, no longer is there a ceiling beyond which local effort will carry a district, nor is there a floor beyond which wealthy districts can easily spend at low effort. Nonetheless, limitations on local taxing power can present the same ceiling effect for all districts. Unless the state wishes to place a limit on demand for schools, there is no place for a property tax limit without additional state funds to replace the lost revenue.

An EPM grant, therefore, does not necessarily provide a raid on the state treasury; it does place all the resources of the state behind each pupil. The only local constraint is willingness of the people to tax themselves, for equal sacrifice means equal program. The state, however, does need to assure full financing.

A state-wide commitment to equal provision of educational opportunity, regardless of tax burden to localities, and more careful attention to measurement of need and ability are also necessary. By raising the question of what form and calling for careful measurement of the elements of the grant, and by committing localities to the provision of the potential of the state's resources to every child, an EPM grant poses the basic question of how much the state should provide.

Aid for Reorganization

Special incentives for school reorganization do not work under a basic Strayer-Haig model of a foundation ceiling because reorganization changes the equalization percentage, the redistribution percentage, and bargaining. Special incentive grants for reorganization, therefore, mean greater state support now for greater local support now and possibly increased local support later.

Unless districts are equal in ability and expenditures, reorganization means an increased tax rate for the same expenditure in one or more of the consolidating districts. If two districts with the same expenditures per pupil have different abilities, one must make a greater effort than the other. When they reorganize, the tax rate in the more able will rise and the tax rate in the other can fall. If the more able district has a higher expenditure per pupil than the less able, the tax rate in both districts will rise. Theoretically, an EPM grant would eliminate these incentives to remain separate, but practically, this might not work, as the experience of Rhode Island and Wisconsin indicates.

I-P-S Tax System Instead of Rate Limitations

If placing a limit on the property tax arises from the consideration that property taxation is relied upon too much, educational considerations point to more state revenue for schools. Otherwise, property tax limitations become the vehicle for reduced support of schools. If placing a limit on property taxation arises from the considerations of particular groups who have excessive property tax burdens, such as the retired, an integrated income-property-sales (i-p-s) tax at the state level is a better solution.[14] For example, Wisconsin passed part of an integrated income-property-sales tax when it allowed credits on the income tax for property taxes exceeding 3 percent of income. Also, Indiana passed part of an integrated income-property-sales tax when it allowed credits on the income tax for sales taxes paid. (Both states pay cash rebates when the income tax liability is less than the credit.) Solutions such as these are preferable to broad limitations on rates as the problem areas of heavy taxation are assisted without unduly restricting revenue.

Tax limitation may be desired because of commercial and industrial property being overtaxed and relocating outside the state, a more difficult problem than excessive burdens on individuals. One route for exploration is the exemption of the personal property components of the property tax, including machinery and inventories, which would make industrial location competitive among states. State taxation of income in place of taxation of property, or state-wide taxation of commercial and industrial property with receipts redistributed on the basis of educational and other local spending are other alternatives.

The essential question in limitation on property taxation is the distribution of the burden of state and local taxation. Are the income, sales, and property tax burdens too high, considered by themselves or in total? Are the burdens on some groups of individuals or industries excesssive? The problem arises from the over-fractionalization of local governments. With respect to education and its principal local source of revenue, the property tax, the problem arises because of life style patterns and differences in owning and paying for property. In either case, the eventual solution is one of state governments' taking a total view of local needs and local ability not only for schools but for all local functions.

Local tax leeway is a necessary condition for an EPM grant. Tax leeway should be assured at both state and local levels. Tax limitation laws have limited success in restraining expenditures.[15] Essentially, they establish the limits of liability for individuals, and for business and industry. A better method is an integrated state-local income-property-sales tax with tax credits and cash rebates. A model for solving this problem is the proposed state-aid plan and property tax limitation laws in Vermont.

State Administration of the Property Tax

The governor of Vermont does not propose state administration of the property tax, but he does propose state collection of the property tax receipts for the foundation program amount. State administration assists in making property tax administration uniform not only for highly specialized and complex commercial and industrial property, but also for single-family residences. The studies by the Advisory Commission on Intergovernmental Relations (ACIR) and that body's suggested legislation provide many clues for state improvement in this field.[16] State administration seems almost a *sine qua non* for adequate measurement of property taxpaying ability in state aid formulas and for proper distribution of the tax burden between individuals and corporate bodies. As an element in the measurement of local taxpaying ability, property valuations require better determination to adequately reflect almost any analysis of state grant operations.

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[14] Rozental, Alek A. "Integration of Sales and Income Taxes at the State Level." *National Tax Journal* 9: 370-77; December 1956.

[15] Leet, Glen, and Paige, R. M., editors. *Property Tax Limitation Laws.* Revised edition. Publication 36. Chicago: Public Administration Service, 1936. 92 p.

Newcomer, Mabel. "The Growth of Property Tax Exemptions." *National Tax Journal* 6: 126-27; June 1953. Table 3 and associated text.

Municipal Overburden

Municipal overburden as an allowance for nonschool expenditures raises the basic question of a state foundation program for all local governmental services: Should the state have a single EPM grant for all local services? This would be the direct attack. However, since this does not seem likely to occur, because, among other reasons, state funds would need to increase, the pressing educational needs of central cities do require some attention.

By removing the foundation ceiling an EMP grant for education is one step in this direction. Another essential step is better measurement of need to account for (a) environment, (b) lower achievement results, and (c) other costs such as small class size and extended school day, week, and year. A third step is counting federal funds provided under Title I of the Elementary and Secondary Education Act as local funds in an EPM grant. Nonetheless, the lower ability of the central cities and other areas because of necessary, high nonschool expenditures would not be recognized.

Sacks[17] has drawn together data which show that central cities in 36 Standard Metropolitan Statistical Areas have tax rates as high or higher than their suburbs but lower school expenditures. Cities have high nonschool costs; suburbs have low nonschool costs and receive more state aid per pupil than the cities.

Cities have always had nonschool costs, and these expenditures have amounted to about three-fourths of total city expenditures since 1913. The changes that have occurred in cities are the loss of the economic resources of a productive tax base, and the gain of the liabilities of extra school and nonschool expenditures while the areas around them forego nonschool expenditures to spend more and more on education. Allowances for municipal overburden require more state funds or redistribution of existing funds with sizeable cuts to suburban schools. The question again is bargaining beyond a foundation ceiling and with greater recognition of need and ability. Thus, municipal overburden as a factor would change the equalization percentage, the redistribution percentage, and bargaining. Municipal overburden, like reorganization and an EPM grant, requires a state-wide view instead of a fragmented local view.

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[16] Bird, Frederick L., and Bird, Edna T. *The Role of the State in Strengthening the Property Tax.* Advisory Commission on Intergovernmental Relations Report A-17, Volumes I and II. Washington, D.C.: Government Printing Office, June 1963. 187 p.

[17] Advisory Commission on Intergovernmental Relations. *Fiscal Balance in the American Federal System.* Publication A-31. Washington, D.C.: Government Printing Office. (In press.)

Sacks, Seymour. *Central City Educational Systems: Economic and Fiscal Aspects of Their Current Dilemmas.* Evanston, Ill.: National School Boards Association. (In process)

Minimum Salary Provisions

Minimum salary provisions in state-aid plans increase from year to year. Based on a salary schedule of years of experience and training, these provisions rest on the indirect local contribution. Legislators interested in seeing how the money appropriated for schools is spent will continue to enact such provisions.

Legislators also will tend toward the total Morphet-Johns budget items approach with a pupil-classroom teacher ratio; allowance for supervisory and administrative positions based on the number of teachers; special classroom units for special services such as counseling and guidance, libraries, and vocational and special education; and for expenditure other than salaries with increasing attention to subdividing this category. As state legislatures are asked to provide more money, they wish to ensure that it is properly distributed—from their viewpoint.

Increasing pupil-classroom teacher ratios makes the Morphet-Johns budget item approach desirable for legislators. Dividing total school expenditures in this manner also permits them to pay more attention to supply and demand conditions. They can pursue alternative policies to increase supply or to decrease demand instead of merely pumping more money into local schools.

Increasing teacher militancy may also cause states to pass minimum salary schedules apart from budget-item grant programs. Minimum salary schedules can be passed or not, depending on the degree to which school administrators and school boards convince legislators that localities can best make budget determinations. If low levels of funding are the problem and if restrictive local tax limitation laws or state funding of grants are the cause, EPM grants might cause a shift away from minimum salary schedules.

Conclusion

The six areas for consideration seem to deal with the form of state grants. Yet I believe they deal more with how much school revenue should come from the state. Adequate state funding of an EPM grant would do much to eliminate considerations of incentives for reorganization, local tax leeway laws, and minimum salary provisions. However, an adequate EPM grant would mean more state funds and a commitment to place the state's resources behind each child.

An adequate EPM grant would call for better measurement of need and ability and meet the problem of municipal overburden and probably move in the direction of state administration of the property tax. The former would also require more funds, and the latter might yield more funds with greater equity.

The crucial question of state aid may remain—what form distributions should take as citizens, taxpayers, legislators, and educators seek to distribute differently a slightly large pie. And yet the crucial question probably should be: How can more funds be obtained to do the educational task? A larger pie is easier to divide.

A larger pie exists economically with the increase in gross national product (GNP) last year being equal to almost double a year's spending on public elementary and secondary education. To be sure, part of the increase in GNP was due to higher prices, but so was part of the increase in school spending. Modernizing state formulas for school funds requires solving the political problems of tapping the economic potential. Otherwise we shall have two communities of school children: one with adequate local resources and the other with the state minimum foundation ceiling. Parents can choose either community if they can move to the high-spending local areas, which are likely to be suburbs that can forego nonschool spending. Equalization of potential with an EPM grant will probably mean more spending by all, but it will move toward equal educational opportunity and especially so if the state adequately measures need and ability. Such changes ask sacrifices of the community with power and adequate resources to provide equal opportunity to the children of the other community. The task requires a great deal of statesmanship.

Modernizing State School Finance Programs: A State System To Equalize the Distribution of Education

J. Alan Thomas

THE ARGUMENT PRESENTED in this paper is based upon a particular interpretation of the word *modernizing*. Here, modernizing is taken to imply (a) improving the manner in which knowledge (used as a gross synonym for education) is disseminated among the population of a state, as well as (b) assuring that the total dissemination of knowledge (or education) is adequate to meet the economic, social, and political demands of the population of the state, and also the demands of individuals and their families for education.

It is assumed that state finance programs have always been concerned with the dissemination of knowledge. Unfortunately, knowledge has always been a scarce resource; hence, education has been rationed in such a way as to favor certain portions of the population.

The scarcity of knowledge has been associated with two factors. First, over the centuries man's understanding of his environment has been limited; today, however, our total stock of information is increasing exponentially. Second, the dissemination of knowledge requires the use of society's most scarce resources, in particular, the time of its most knowledgeable members. Hence, when knowledge was imparted on a one teacher/one student basis, society could afford to educate only a privileged few. Group instruction has greatly increased society's potential to educate its members. However, the technical difficulties involved in mass education and the shortage of teachers have acted as constraints, so that knowledge is still rationed, although the rationing procedures are subtle and covert. The increasing cost of providing knowledge to all has resulted in an intensified search for new and improved inputs, to act as complements to and substitutes for the time of teachers. As new methods of disseminating information (for example, by computers, satellite information systems, and television) are developed, the millenium, in which knowledge becomes as widespread as air and water, is approaching.

The Rationing of Knowledge

It is well known that the present methods of financing education favor those groups of individuals who are in preferred social and economic posi-

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tions. This differential access to knowledge is not new; as pointed out above, improved technologies have disseminated knowledge more widely than ever before. However, it is important to recognize that inequity persists and is closely related to the way in which we finance our schools.

The data presented in the following sections are for the most part well known. They are included here to reinforce the argument of this paper.

Interstate Differences

The population of the wealthy states, on the average, tends to have more education than does the population of the less wealthy states. Wealth, of course, is not the only factor; Utah, for example, which is not one of the most wealthy states, boasts of the nation's highest median level of schooling. However, as Table 1 indicates, the states which are highest in median per-capita personal income are also highest in median years of schooling completed by persons 25 years old and older.

TABLE 1.—INCOME AND EDUCATION: WEALTHIEST AND LEAST WEALTHY STATES

State	Per-capita personal income, 1966	Median school years completed by persons 25 years old and older, 1960
Connecticut	$3,690	11.0
Illinois	3,532	10.5
Delaware	3,529	11.1
Nevada	3,497	12.1
New York	3,497	10.7
Alabama	2,066	9.1
South Carolina ..	2,052	8.7
Arkansas	2,010	8.9
Mississippi	1,777	8.9

Sources:

Bretzfelder, Robert B. "Personal Income Advance Slows in Nearly All Regions in Early 1967." *Survey of Current Business* 47: 28-40; August 1967.

U. S. Department of Commerce, Bureau of the Census. *U. S. Census of Population, 1960: U. S. Summary.* General Social and Economic Characteristics, Series PC (1)1C. Washington, D. C.: Government Printing Office, 1962. 344 p.

Intrastate Differences

Within states, also, there is a relationship between wealth (as represented by income and property valuation) and the manner in which knowledge is distributed. Many students of educational finance have demonstrated that wealth is the most important single factor affecting expenditures for education.[1] Table 2 shows a close relationship (in one state) between income and education. As with the interstate comparisons, Table 2 does not suggest a simple cost-effect relationship. It does indicate that education is allocated among our population along economic lines.

Racial Differences

Since there is a strong correlation between race and economic status, it is not surprising that there are differences in the amounts and quality of education possessed by whites and non-whites.[2] In 1960 the median edu-

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[1] For example: Cubberly, Ellwood P. *School Funds and Their Apportionment.* Contributions to Education, No. 2. New York: Teachers College, Columbia University, 1906.

James, H. Thomas; Thomas, J. Alan; and Dyck, Harold J. *Wealth, Expenditures and Decision-Making for Education.* U.S. Office of Education, Cooperative Research Project No. 1241. Stanford, Calif.: Stanford University, School of Education, 1968. 203 p.

[2] Coleman, James S., and others. *Equality of Educational Opportunity.* U.S. Department of Health, Education, and Welfare, Office of Education. Washington, D.C.: Government Printing Office, 1966. 737 p.

TABLE 2.—INCOME AND EDUCATION: EIGHT MISSOURI COUNTIES

County	Median family income, 1959	Median school years completed by persons 25 years old and older, 1960
St. Louis	$7,527	11.7
Clay	6,606	12.1
Jackson	6,028	11.6
St. Charles ...	5,915	9.0
Pemiscot	2,276	7.5
Mississippi ...	2,736	7.7
New Madrid ..	2,173	7.8
Washington ..	3,363	8.1

Source:
U. S. Department of Commerce, Bureau of the Census. *U. S. Census of Population, 1960: Missouri.* General Social and Economic Characteristics, Series PC(1)27C. Washington, D. C.: Government Printing Office, 1962. p. 82-85.

cational attainment of whites in the United States was 10.9 years, while that for nonwhites was 8.2 years.[3] Differences in achievement between white and Negro students have been documented in many studies. Additional data are shown in Table 3.

Social Class Differences

In the Michigan study, some intriguing differences among social classes in programs and services were noted. It appears that there is a relationship between the culture of the community and that of the school, with the communities of upper social class demanding more up-to-date, innovative programs, such as modern mathematics and team teaching, than are demanded by lower middle class and lower class communities. (Table 4)

The amount of education made available among and within states appears to be allocated along economic and social lines. State aid programs are procedures for allocating education within states. Although state aid programs attempt to narrow differences in the economic capacities of school districts, they do not eliminate them. It is not atypical for the wealthier districts (in terms of the property tax base behind each child) to spend more for education and to levy lower tax rates, while the poorer districts spend less, but levy higher taxes.

Changes in these procedures are both desirable and necessary. Knowledge no longer needs to be a scarce commodity, and the rationing of education is no longer necessary. Changes in social norms support improvements in the educational opportuni-

TABLE 3.—PERCENT OF SCHOOLS WITHIN CITY OF DETROIT FALLING ABOVE OR BELOW CITY SIXTH-GRADE ACHIEVEMENT NORM, BY PERCENT OF NEGRO ENROLLMENT

	Percent of schools	
Percent Negro	Below	Equal or above
0-10%	9	91
11-50	44	57
51-89	68	32
90-100	94	7

Source:
Thomas, J. Alan. *School Finance and Educational Opportunity in Michigan.* Lansing: Michigan Department of Education, 1968. p. 61.

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[3] U.S. Department of Commerce, Bureau of the Census. *U.S. Census of Population, 1960: U.S. Summary.* General Social and Economic Characteristics, Series PC(1)C. Washington, D.C.: Government Printing Office, 1962. 344 p.

TABLE 4.—PERCENT AND NUMBER OF JUNIOR HIGH SCHOOLS IN EACH CATEGORY OFFERING SPECIAL CLASSES, PROGRAMS, AND TEACHERS, 1966-67

(Number of cases shown in parentheses)

Classification	Classes for verbally talented	Classes for quantitatively talented	Modern mathematics at all levels	Librarian	Remedial reading teacher	Art teacher	Team teaching	Curricular provision for pupils not benefiting from regular program
Income of head of household in school attendance area								
$7,000 or more	58% (152)	52% (136)	89% (203)	88% (230)	67% (176)	83% (216)	37% (96)	70% (185)
Less than $7,000	37 (139)	32 (124)	86 (257)	79 (302)	59 (227)	61 (235)	22 (84)	56 (216)
Occupation of head of household in school attendance area								
Managerial, professional, skilled worker	68 (73)	63 (66)	84 (91)	91 (96)	63 (68)	88 (95)	42 (48)	75 (81)
Semi-skilled farmer or laborer	40 (210)	36 (186)	68 (355)	81 (421)	62 (326)	66 (344)	25 (128)	60 (312)
Type of housing in school attendance area								
Expensive	68 (17)	64 (16)	88 (22)	96 (24)	76 (19)	92 (23)	56 (14)	72 (18)
Medium-priced	48 (175)	45 (163)	74 (269)	85 (307)	66 (241)	77 (277)	32 (84)	64 (235)
Low-priced	37 (90)	30 (73)	66 (160)	78 (187)	56 (135)	58 (142)	20 (47)	56 (137)

Source:
Thomas, J. Alan. *School Finance and Educational Opportunity in Michigan.* Lansing: Michigan Department of Education, 1968. p. 27.

ties of the socially and economically under-privileged minorities, while members of these minorities are now vocal in their demands for more and better education.

One final factor deserves consideration. The persistence of inequities in the dissemination of knowledge results largely from the use of primitive systems of gathering information. The advent of the high-speed computer makes possible the feedback of data concerning the effects of procedures for distributing resources for the support of education. This capability foreshadows a new and exciting approach to the financing of education. This approach is developed in the next section.

Toward a State Educational "System"

> The idea of *system* has emerged as all-important, and indeed the situation confronting the manager at any moment represents one state of a system undergoing dynamic change. This system is characterized by various features which are fundamental to the management problem. It is exceedingly complex. It is highly probabilistic. It is, at least in certain ways, self-regulating. . . .[4]

A system may include subsystems. Thus, the automobile is a system, which includes a cooling system, an electrical system, and a mechanical system. A state's financial support program may have all the aspects of a system, while including within it a number of operating subsystems, including local school districts, schools, and classrooms.

For the purpose of this paper, the key aspects of a state's educational system are (a) some control over inputs, (b) some monitoring of outputs, and (c) a feedback system whereby outputs affect inputs.

Consider, as an example, a state system for vocational education. In their concern for the nature of inputs, the states exercise general control over the certification of teachers of vocational education. They certify buildings, at least as to their safety, but probably also as to the efficiency and appropriateness of their construction. State curriculum guides are often provided, and there may be some state supervision of teaching. What is commonly missing is a monitoring of outputs. How successful are graduates of vocational schools? Do their employers find them prepared for their jobs? Is vocational education a suitable preparation for on-the-job training? Without feedback from such questions about outputs, it is difficult to examine the appropriateness of inputs—the nature of the teaching force, the buildings, and the curricula. In other words, the allocation of monetary inputs into the vocational programs cannot be studied without a study of outputs.

The same problem may be generalized to the total state educational system. Most states influence inputs in the form of controls over the maximum and minimum amounts which school systems have available to spend, and also in terms of the certification of teachers, school building standards, and curriculum guides. Only a few states provide for a monitoring of outputs or for feedback. Consequently, most states allocate education unequally among members of their population. In many instances inhabitants of rural areas and central cities are given less education (both quantitatively and qualitatively) than inhabitants of the affluent suburbs. In order that this situation may be corrected and education may be more equitably distributed, a feedback mechanism, linked to the allocation of inputs, is required.

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[4] Beer, Stafford. *Decision and Control.* New York: John Wiley and Sons, 1966. p. 241.

To illustrate the implications of this analysis for practice, I turn now to several of the key issues.

School District Consolidation

The inefficiency associated with the persistence of school districts of very small enrollment is well known. In the Michigan finance study,[5] it was found that small districts offer fewer courses than large districts, and tend to lack provision for the education of atypical children. They have, on the average, teachers with lower qualifications and less experience. Teachers are more frequently responsible for instruction in subjects outside their areas of preparation. Teachers are more often called upon, in small districts to have three or more different preparations per day. Smaller districts tend to lack provision for in-service training of personnel, · and funds for research.

Also, cost differences are associated with economies of scale. Too many studies of economies of scale have concentrated on entire programs. Hence, the large district, with its *wider product mix* (in terms of the greater variety of programs and services which it offers) may operate at a *total* per-pupil cost which is not lower than the *total* per-pupil cost in the small districts. However, the unit costs (for example, per-student-day costs) of specific services, such as administration, instruction in biology, or instruction in automotive mechanics, may be characterized by economies of scale.

Methods of bringing about a reorganization of school districts will vary according to the amount of information utilized in decision making. On the assumption that any school district organization which combines small, inefficient districts is an improvement, states may provide fiscal incentives to encourage the process. If states have more information, they are in a position to develop master plans, which are useful as guides for voluntary or mandatory consolidations.

The operations research approach requires many more data about the unit costs of educational programs, and about the various factors (economic, sociological, and geographic) related to school system outputs. Mathematical models, including linear programming and for multiple regression analysis, may then be utilized in developing an educational organization oriented toward the equitable distribution of education among the population of a state. One set of constraints in such a model is the political realities of the system. However, it is possible that these constraints might be weakened in the face of irrefutable evidence concerning the effects of possible alternatives.

Urban Education

Two separate, but often confused problems characterize the issues involved in financing education in our major cities. The first problem is purely fiscal. It concerns the high costs of inputs (teachers' salaries, sites, wages of unionized employees, and the like). It also includes those fiscal problems which are associated with the high total costs of municipal government. See Lindman's analysis.[6]

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[5] Thomas, J. Alan. *School Finance and Educational Opportunity in Michigan.* Lansing: Michigan Department of Education, 1968. Chapter 2, "Educational Opportunity in Michigan," p. 7-66.

[6] Lindman, Erick L. *State School Support and Municipal Government Costs.* U.S. Office of Education, Cooperative Research Project No. 2123. Los Angeles: University of California, 1964. 130 p.

The other problem is more closely related to this paper. It concerns the differences in the amounts of knowledge possessed by adults and children in the inner city areas of the nation. It centers on such problems as low achievement, high dropout rates, and low median educational attainment. To be sure, this second problem has financial implications. However, there is as yet no evidence to indicate that increased expenditures for the education of our inner city minorities will automatically lead to better achievement and to lower dropout rates.

The problem is, in part, one of limitations in knowledge about the types of educational provisions (in terms of both pedagogy and organization) which are most effective in these types of situations. Since no one method of attacking the problem is demonstrably most effective, alternative procedures are desirable, with an accompanying evaluation of their costs and benefits. This evaluation would, in turn, be used as feedback in the modification of the present input mix.

This is another fertile area for the operations research person. Large city schools are especially well suited to the development of experimental designs, with control and experimental treatments provided systematically. Cost analyses are desperately needed, in order that the available resources can be effectively applied. Even more essential is an evaluation of the outcomes associated with the alternative methods of approaching the problems. At the state level this systematic approach to the financing of urban education will undoubtedly mean that more money will be spent for urban education than has been thought possible or necessary up to this point. It will also, however, include a close evaluation of outputs and a carefully applied feedback mechanism, to ensure that additional expenditures will lead to improved educational opportunities for urban minority children.[7]

The Place of Salary Schedules in State Foundation Programs

One of the most important factors in the distribution of educational opportunity in a state is the manner in which teachers are allocated among subgroups of students. Our research in Michigan indicated that there are important differences in the qualifications of teachers among districts according to the variables of size (in terms of total membership), wealth (property valuation per pupil), per-pupil expenditure, and geographic region.

Unless one accepts the proposition that teachers' qualifications are unrelated to the quality of education, it appears that the allocation of education is affected in part through the differential availability according to quantity and quality of teaching personnel among the schools in a given state. This impression is strengthened, if one examines differences between the qualifications of teachers in the white and nonwhite schools in our major cities; the latter, in certain cities, tend to include a predominant number of teachers who are younger, less qualified, and more likely to be without basic certification.

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[7] For an operational example of such a feedback mechanism, see: Benson, Charles S., and others. *State and Local Fiscal Relationships in Public Education in California.* Sacramento: Senate of the State of California, 1965. 72 p.

Some sophisticated states which might well lead to the type of operations research advocated here are being carried out by James N. Jacobs, Director of Program Development, Cincinnati Public Schools, and a report in the publication, *Journal of Instructional Research and Program Development.*

In the absence of a unitary system of education where teachers are assigned by the state to certain schools, it appears that rational policy would link any state salary level to feedback from school system outputs. Salaries might then be raised in areas where feedback reports were negative, thus providing a counter-thrust to whatever forces result in low achievement.

Alternatively, specially qualified teachers might be assigned for a specific time to low achievement schools. Such a policy, based on the concept of a state educational system, seems preferable to the establishment of a state-wide salary schedule.

A State-wide Property Tax

The arguments favoring a state-wide property tax may be put in fiscal terms. Alternatively, a systems approach to this proposal may be developed. For the fiscal statement, I quote as follows from the Michigan school finance study.[8]

> In 1902, the states obtained 52.6 percent of their revenue from state property taxes. As other sources of revenue became available to them, they delegated this tax to local governments, so that by 1964, property taxes provided only 3.0 percent of the total tax collections of state governments.[9] In delegating this power, states authorized a local tax which benefited school districts and municipalities unequally. Districts with high property values per head of population or person served received a much greater benefit from this authorization than did districts with a low assessment. The state therefore created a system of taxation which resulted in vastly differing tax rates, as well as in differing levels of benefit from governmental services.
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> The most effective way to guarantee that the educational opportunities of children in Michigan would be equitably distributed would be through a shift toward state responsibility in providing revenues for the operation of schools. To take the extreme case, if the state were to pay the entire cost of financing a basic educational program as determined by local and state authorities, by distributing a given per-pupil dollar amount to every school district in the state, a high level of fiscal equity would result. Additional revenues would be obtained by local districts through their right to levy voted millage. (Since equal educational opportunity probably requires unequal allocations of funds, this procedure would not completely equalize educational opportunity.)
>
> One solution to this problem would be for the state to reimpose its right to tax property. If the state were to levy a state-wide property tax of, say, 12 mills on each dollar of state equalized valuation and to distribute the proceeds equally on a per-pupil basis to all districts for operating purposes, a number of beneficial results would occur.
>
> > (1) This tax, together with the present state aid distribution, would enable the state of Michigan to provide each school district with a dollar amount sufficient to provide a "basic educational program." (With a slight increase in the present state aid, approximately $500 per pupil could be provided throughout the state. Additional amounts might be provided for certain important categorical purposes.)
> >
> > (2) The state collection of a major portion of the property tax would lead to possibilities for property tax reform which otherwise do not exist. Well-trained state tax assessors would be able to introduce a high degree of competence into the assessment process. More equitable tax administration, both in and between jurisdictions, would result.

Let us consider briefly the approach taken in this paper which postulates a state school finance system. Under the present arrangements for financing education, most resources are provided in communities where output levels (in terms of such measures as high achievement, low rates of dropouts, and high rates of college going) are highest. This is because the present procedures of fiscal decentralization provide the highest levels of school support in those school districts where the efforts of the schools are most strongly reinforced in the homes and communities.

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[8] Thomas, J. Alan, *op. cit.*, p. 325-26.

[9] Break, George F. *Intergovernmental Fiscal Relations in the United States.* Washington, D.C.: the Brookings Institution, 1967. p. 8.

A feedback system would result in the opposite type of effect, with additional resources being made available for education where outputs are substandard. For such a feedback to be possible, the resources available for supporting schools would have to be placed in the hands of the state. This would argue for a state-wide property tax. The effect would be to tax people where the resources are most available, and to provide the funds where the educational needs are greatest. This is a revision of Cubberly's dictum that "the wealth of the state should be used to educate the children of the state."

Summary

Although portions of the argument above are familiar to this group, the main theme presented in this paper runs counter to the mainstream of thought in educational finance. It has been proposed that computerized information systems make possible approaches to the distribution of state funds based on the concept of a state educational "system." In particular, it proposes ways in which feedback may be utilized to channel state funds so as to provide a more equitable distribution of education than presently exists.

This paper has alluded to the potentials implied in such techniques as are subsumed under the rubric of operations research. These procedures, which include the development and utilization of complex mathematical models, will introduce a new sophistication into decision making.

One basic assumption lies behind the argument presented in this paper: that a major objective of school finance programs is to obtain a more equitable distribution of education than is now in effect. If this assumption is not accepted (and present practice appears to be based on elitist rather than egalitarian principles), the argument is invalid, and other approaches to educational finance are more appropriate.

Strengthening the State-Local Relationship in Urban Education

I. The Challenge for Federal, State, and City Leadership

William D. Firman

THAT THERE IS AN EDUCATIONAL crisis in our large cities is an undeniable fact. The accumulating evidence of problems and frustrations in dealing with problems is recorded daily. The problems of the urban school, of course, are inseparable from those of the urban community. Providing suitable educational opportunities within these vast complexes is a task of unparalleled magnitude, enormously complicated by sociological, economic, and political considerations.

Unfortunately, in most cities the procurement of funds is seriously handicapped by the restrictions imposed by outmoded constitutional or statutory tax and debt limitations, by the proportionately greater costs of providing other municipal services, by erosion of the real property tax base, and by reliance upon patterns of structural arrangement and administrative behavior which have long since outlived their usefulness.

Unfortunately, at the same time, state governments generally, have not responded with understanding or with meaningful intent to the evidence of mortal disarrangements which characterize urban life. Part of the dissociation of the states from their cities flows from an historical tradition of separate growth, part from constitutional and/or statutory provisions, part from disproportionate representation of the population in state legislatures, and part from a socioeconomic climate which until the end of World War II concentrated the economic wealth and social status of the nation in its large cities.

While most of the conditions which have fostered separate growth and development have now radically changed, state governments have not yet adapted themselves to their new role. It is probable that some have not yet recognized the nature of the changes which have occurred. It is likely that others have not related the changes to the new concepts of state government which must emerge; and it is certain that in those states where the people are addressing themselves to the modernization of their consti-

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tutions and the strengthening of state government that the task has hardly begun.

There apparently are at least five barriers to improvement in urban education.

1. The limiting geographical confines of the single school district. Can better solutions be found in the development of metropolitan as against city government and by cooperation between urban and suburban areas?
2. Inadequate financing.
3. Apathy of the power group in large cities toward urban educational problems.
4. Existence of *de facto* segregation.
5. The unmanageable size of large city school systems.

While these barriers have been identified for some time, they are increasingly perceived in relationship to the trends and forces which will increasingly shape the future of education.

Urban-Suburban School Differences

The data reported by the National Inventory of School Facilities and Personnel in 1962, showed that there were major differences in classroom overcrowding as between urban and suburban school districts in the same state. As a matter of fact, for those seven states which contain the seven largest cities the difference between urban and suburban communities in the percentage of classrooms with more than 30 pupils is striking:

	Urban	Suburban
California	49.5%	37.5%
Illinois	59.3	19.7
Michigan	60.4	26.9
New York	35.1	14.4
Pennsylvania	46.0	23.3
Texas	29.6	22.0
Maryland	16.0	41.0

Clearly, there is a concentrated need for the construction of additional facilities in our large cities, and with but few exceptions, the resources of state government are not harnessed effectively to city school systems in meeting these needs.

A Challenging Opportunity for Leadership

It does seem apparent that unless there can be a change in the public image of that which constitutes a "school" there will be continuing battles about busing to improve racial balance, emotional pleas to retain the neighborhood school, misunderstandings about the respective roles of parents and school authorities at varying levels of control, and the like.

Of course, all of this might be worthwhile if there were a conviction that the urban school system is adequately serving the purposes of public education in this century. Realistically, it must be admitted that there is a possibility that it is not. Moreover, if the criterion of effectiveness were described in terms of the best that is known about education, the resulting appraisal might be a less-than-satisfactory one. Furthermore, the prognosis for improvement is not encouraging. City school systems, fiscally and administratively dependent, increasingly influenced by the demands of organized labor, limited in their responsiveness to public demand, controlled in part by political considerations, overburdened with inadequate facilities and disproportionate populations of the disadvantaged are not likely to become the agents of change. They do present, however, a challenging opportunity for federal, state, and local leadership.

The revitalization and/or reorganization of city school systems will, in all likelihood, be a task of such magnitude as to require major allocations of resources at all three levels of government.

The central task might be perceived as one of reorganizing and rebuilding city school systems in accordance with master plans to be developed in and for each city and its metropolitan area. In the same way that resources and public attention were focused upon the problems of rural education in the 1930's, it is now appropriate to focus attention and resources upon the improvement of city school systems. In a general sense, the functions to be undertaken might be described as research, coordination (multi-level), planning (interagency), implementation, evaluation. At the work assignment level these general categories could be explained in great detail, as indeed they would need to be if common understandings and decisions relating to such concerns as the philosophical base of an educational plan, geographical plan, geographical areas to be served, organizational structures to be developed, administrative arrangements to be created, physical facilities to be built, and the educational programs to be created are to be achieved.

While the task which is suggested is a difficult one, sufficiently complicated to challenge and test the intellectual creativeness of federal, state, and local leadership, the products to be achieved might extend beyond the development of a modern, dynamic, effective, and revitalized school system. The processes of interagency, interorganizational, and interpersonal coordination and cooperation toward a common purpose could provide a new basis for the solution of other problems to which an increasingly urbanized nation must address itself.

It is not unrealistic to suggest that well-planned and coordinated efforts of state, local, and federal government could produce city school systems with such characteristics as the following:

1. School facilities and program, modern and attractive, developed as a result of comprehensive community planning with professional leadership: schools which reflect the best in modern design, planned to provide flexibility in utilization, and located in attractive environments.

2. School complexes sufficiently large to provide comprehensiveness of programs and services with economy and efficiency, but with services of the school kept close to the individual pupils. These educational complexes might be viewed as multi-building arrangements with a specialization of building functions where such specialization is appropriate.

3. Educational complexes located initially in geographic areas outside the city core and its zones of transition serving a sufficiently large cosmopolitan population as to permit balancing of ethnic and other groups.

4. Schools operating on the basis of an extended school day and an extended school year. The advantages to be accrued through this arrangement, more educational than fiscal, provide more opportunities for learning, more special attention to the needs of the disadvantaged, more opportunities for increasing the comprehensiveness of programs and services. The degree to which individual pupils or teachers would participate in the year-round school can be adjusted to the individual's needs, abilities, and preferences.

5. Educational complexes sufficiently large and well staffed to permit adjustment to a day-by-day enrollment

of new pupils, either those who have reached school age and/or school readiness or those who are transfers. New entrants would go through a period of near-individual orientation before assignment to an individually oriented school program.

6. Individual performance in the acquisition of knowledge, the development of skills, and the establishment of attitudinal and behavior patterns would become the criteria of school quality.

7. Nongraded organizational structures, flexible in scheduling, staffed with well-trained professionals, supported by paraprofessionals and specialists would, through alternative strategies of mass and individual instruction, assure that "every child shall learn."

8. Educational complexes designed with adequate facilities and provided with instructional staff to accommodate the adult educational needs of the community. They could also be provided with the facilities to permit use for other community-oriented activities: committee meetings, forums, school meetings. They could become the place where community action groups could plan activities for improving the quality of community life.

9. While the central administrative organization and structure of the large city has and could continue to have control over those functions which it can best serve, there appear to be certain control functions which might be more advantageously delegated to local boards of education, possibly elected by the people. The division of responsibility and control in city school districts, and in some of our growing suburban school districts, is worthy of study.

10. A fiscal base would be created for the support of a revitalized urban school system which is sufficiently flexible to provide the resources which the educational needs of the community might demand. Federal, state, and local arrangements would permit the flow of resources in accordance with well-established principles of public finance.

An Office of Urban Education

Two years ago Commissioner James E. Allen, concerned with the growth of urban school problems in New York State, directed that studies be undertaken in the major cities of the state to serve the following purposes:

1. To identify and describe the major educational problems which are characteristic of large urban communities (large cities and their suburbs).

2. To develop an understanding of these problems as they are interrelated, and as they reflect the influences of specific forces in the social, economic, and political environment.

3. To provide factual information, analyzed in such several ways as will support recommendations to the Commissioner for modifying the organization of the State Education Department to deal more directly and effectively with the problems of urban education. Specifically, he announced an intent to form within the Department an Office of Urban Education.

Strengthening the State-Local Relationship

Concurrent with the Department's endeavors aimed at the creation of an Office of Urban Education, it has sponsored a multi-state project involving the seven states with the seven largest cities; California, Texas, Illinois, Michigan, Pennsylvania, Maryland, and New York.

Typically, these departments are weakly oriented philosophically, structurally, administratively, and procedurally to deal with problems of education in an urbanized culture. Characteristically, they reflect the legal and operational arrangements which were appropriate to an agricultural society of farms, villages, and small cities.

Specifically, the project has united these states and cities into a common endeavor to assess and improve state-local relationships. The new knowledge which will be developed, analyzed, and reported will be helpful to all of the states and their cities. Moreover, the plans, programs, and experimental projects which are developed will provide guidelines and models for adoption or adaptation. During the last year, chief fiscal officers of these state departments and city school districts have been meeting together and with consultants for the purpose of designing studies directed toward solution of the fiscal problems such as those with which we are concerned here today. Professor James Kelly of Teachers College has been conducting these studies and he will report progress to you today. In the same way, Professor Edmund Reutter, within the last month, has been exploring the feasibility of studies of legal structure. He will present his findings also today.

The Role of the State

State responsibility for education is firmly embedded in American tradition. Our American system of education is a product of state initiative and enterprise. The role of the state is to provide leadership, to provide organization and coordination, to lead in planning, and to conduct research. The state is the key to securing a proper balance of strength among local, state, and federal agencies.

Realistically, of course, all state departments of education are not structured or staffed to deal effectively with the educational problems of the emerging era. For those states, the strengthening of the department itself is of a priority equal to the introduction of new programs into the schools themselves. Without effective and strong leadership in the state departments to plan, organize, innovate, supervise, and evaluate, it is likely that program funds will be wasted.

The indecision and controversies which currently frustrate our efforts to improve the city school system have resulted from a failure to arrive at a commonality of understanding in the critical area of interrelationships. While there is consensus as to the goals to be achieved, there are also important differences of opinion as to the procedures to be used in achieving these goals. Let it be clear that the emphasis given to the diversity of opinion among the states is not to be construed as the basis for an argument for conformity. On the contrary, diversity of pattern, providing flexibility and adaptability, can be a source of strength.

Clearly, the investment of our resources in education will increase, but if this investment is to yield the greatest returns, if it is to produce the quality of education we want and guarantee equality of opportunity, if it is to provide education that serves the individual and at the same time the interest of our total society, nationwide cooperation and planning must become a central endeavor in which the interest of all three levels of government are involved.

II. City-State Fiscal Relationships in Public Education

James A. Kelly

I AM CURRENTLY CONDUCTING a study under the auspices of the Multi-State Project to Improve Relationships Between State Departments of Education and Big City School Systems. That impressive, or at least weighty, title accurately reflects the topics and orientation of the studies it has funded. I am engaged in a modest study of two areas in which state policy is inextricably involved, yet which represent vexations and persistent problems for city school districts. The two areas are teacher supply and demand, and measures of need for educational services. I shall discuss each of these areas in some detail, but because the study is not scheduled for completion until July 1968, it will not be possible to present any findings at this time. The discussion of these two areas will therefore be restricted to characteristics of the problems being studied, and approaches being used to study them.

Following the discussion of these two topics, I shall briefly comment on each of four additional areas of concern in current fiscal relationships between state government and city school districts. The six topics represent neither a taxonomy nor the complete domain of fiscal problems in city school districts. However, the problems are representative of problems facing large cities, and it is at least conceivable that state governments can act to relieve them; indeed, in several of them state policy is the central issue.

Teacher Supply and Demand

A generation ago, candidates for teaching positions flocked to large cities because educational innovations were developing there and salaries were particularly strong. Today, the circumstances are reversed; at today's salaries in many cities there is neither sufficient quantity nor quality of available teachers.

The published literature on teacher supply and demand is dominated by the reports of the NEA Research Division, which publishes an annual report called *Teacher Supply and Demand* as well as other publications on the same subject. This literature in the past has grouped school districts by size (e.g., Group I, 500,000 or more in population). Cities have neither been identified individually nor compared with states. Rather, traditional breakdowns include level of teaching (elementary, secondary), subject mat-

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ter, and type of training. These data have been used to develop an index of demand for teachers, which is expressed as a percentage equal to the number of new teachers actually employed (demand) divided by the number of teachers newly prepared for certification (supply). This index has been calculated for each year since 1955 for each of 21 major fields of teaching. However, it has not yet been applied directly to cities, nor have city-state comparisons of the resulting index been developed.

We are attempting to obtain directly from cities, data regarding certain characteristics of the supply of teachers presenting themselves for employment in cities. Defining "supply" as the total number of applicants (overlooking for practical reasons the problem of multiple applications), supply characteristics from cities can then be compared with supply characteristics at state levels as reflected in NEA Research Division state data. Supply characteristics can also be compared across cities with respect to various measures of teacher salaries, and also with respect to the relationship between supply trained at several different levels of training, and demand for teachers, as measured by the number of replacements plus the number of additional positions budgeted. These analyses constitute the largest part of our efforts in the study.

While much has been written about the teacher shortage in general, and the particular shortages in cities, we lack descriptive data about the actual supply-demand situation in cities and characteristics of the supply now available. With such descriptive data, the kinds of simple analyses described above will tell much not now known for certain about the specific problems faced by cities. Only then can state policy remedies be accurately designed and rationally debated.

Relevant policy questions in this area include:

1. Does aggregate demand for trained teachers exceed supply in the big cities?

2. How do patterns of teacher supply and demand in cities compare with those in rural and suburban areas?

3. If teacher shortages exist in cities, how responsive is supply to an increase in price?

4. Are certification and examination barriers to entry into city teaching positions more difficult than for entry to rural and suburban teaching positions?

5. To what extent is supply of teachers for a big city geographically mobile? How can existing channels of supply be expanded? Can the teacher supply "milkshed" of a big city be mapped?

Measures of Need for Educational Services

Most state aid formulas measure the need for educational services in a local school district by counting the pupils attending the district's schools. This procedure counts all children identically (or with simplistic weightings, such as 1.25 for all secondary-school pupils), yet it is well known that all children do not in fact need identical educational services. Some require services far more costly than others.

My study of city school districts has convinced me that their perplexing problems are caused primarily by the extraordinary and unparalleled concentration of populations requiring such costly and sophisticated services that the capacity of the city school district to respond to such needs is se-

TABLE 1—PERCENT OF PUPILS IN FAMILIES WHOSE INCOME IS BELOW $2,000 [a]

State and city	Percent
California	7.2%
Los Angeles	9.6
San Diego	10.9
San Francisco	11.1
Illinois	11.0
Chicago	21.6
Maryland	8.3
Baltimore	14.8
Michigan	7.4
Detroit	17.0
New York	9.4
Buffalo	19.8
New York City	16.6
Pennsylvania	10.8
Philadelphia	18.5
Pittsburgh	22.5
Texas	15.8
Dallas	19.5
Houston	12.5

Source:
U.S. Department of Health, Education, and Welfare. Office of Education, Division of Compensatory Education.

[a] Or with more than $2,000 in annual income but including ADC funds.

verely strained if not exceeded. Evidence to support this perception can be drawn from a disturbing trend in urban population characteristics. The number of cities below the median for their state in years of education attained by the adult population has increased from 39 of the largest 130 cities in 1940 to 58 of the 130 in 1960. This decline in what can be called the "human capital" of the city is also reflected in income data used as the criterion for allocating ESEA Title I funds. Table 1 shows that in a review of data for seven states and 12 cities, in every case except one (Houston), the proportion of enrollment eligible for Title I funds was larger in the cities than for the state as a whole. In most instances the differences are dramatic.

Because city populations have changed and efforts in compensatory education have not yet succeeded despite the best of intentions, the level of pupil achievement in most cities is significantly below state averages. The proportion of handicapped children and pupils in vocational education, both requiring expensive educational services, compound high expenditure requirements created by the low achiever. The price of racial integration in cities, if indeed it is ever to be achieved, is considerably higher than in small school districts simply because of the numbers and distances involved.

This analysis suggests three ways of measuring the marginal difficulties of urban education:

1. Academic achievement
2. Environments
3. "Cost of business" for special programs.

Academic achievement is a direct measure of need for educational services. Where large proportions of pupils are achieving far below expected levels, it cannot be denied that the children are in need of an improved provision of educational services; to argue about why the achievement in a given place is low (e.g., poor teaching, disadvantaged home and family environment for pupils, lack of special remedial programs) is not to deny that the need exists.

Several states already conduct extensive, state-wide achievement testing programs, but such data are not always available. Thus, the measurement of environments which reflect need for educational services is also needed. Several major studies in recent years have established a surprisingly close relationship between family and community characteristics and pupil achievements. Indeed, no school variable measured by Colemen, by the International Study of Mathematics Achievement, or by the Civil Rights Commission was as important as family and community characteristics in accounting for variations in pupil achievement. Farquhar, Wolf, and others at the University of Chicago have demonstrated that direct measures of home environment (home by home) are associated even more closely (r=.80) with variations in achievement than are comparatively simple community measures of social status.

If the rate of learning (achievement) is substantially determined by conditions in the child's environment, there is considerable logic in relating state aid inversely to the quality of the child's total learning environment.

The argument for examining the additional costs of special educational programs is that presumably they are more frequently needed in cities than elsewhere. Because such costs are not equitably distributed, the argument goes, the state should assume the "extra" costs over and above the level "expected" in a "normal" community.

Each of these three alternative ways of measuring educational need can be explored in an attempt to develop an "index of disadvantage" for city school districts in participating states. We shall compare several alternative combinations of variables in an attempt to develop an "index of disadvantage" suitable for use in state aid formulas. Suggestions will be offered as to how such an index could be included within state aid arrangements.

Other Problems

I turn now to four other problems in financing city schools: property tax administration, state restrictions on taxing powers of city school districts, measures of local fiscal ability, and school management.

Property Tax Assessment Arrangements

The average current expenditures per pupil in ADA for education in the United States increased by over 300 percent between 1930 and 1960, from $87 per pupil to $375, but during the same period the increase in property values in cities fell far short of matching that dramatic growth in expenditures. In New York City, for instance, the full market value of taxable property increased only 15 percent in those 30 years; for Buffalo, the increase was 37 percent; for Philadelphia, only 6 percent growth was noted. Even for Detroit, San Francisco, Los Angeles, and Baltimore, where the growth in property values was between 100 percent and 200 percent, it lagged far behind the average increase in expenditures.

Part of this apparent decrease in ability to support education in big cities is due to the tendency in most cities to allow the ratio of assessed values to full market values to decline, thus reducing the capacity of the school district to tap local funds. This reduction is particularly restrictive in the many states which define local school taxing authority in terms of tax *rates*, and even more restrictive on the many cities for which taxing authority is limited more stringently than for other school districts in the same state.

One possible explanation for this secular decline in fiscal ability is the practice of many city assessors (especially elected ones) of underassessing residential property, and overassessing commercial or industrial properties relative to residential. (This is called a "possible" explanation because the secrecy surrounding most assessment activities makes research in this area difficult.)

Retaining existing industrial wealth and attracting new industries are essential ingredients of progressive local and state government. To permit taxing arrangements to drive industry out of cities at a time when cities need every tax dollar they can get is surely something less than wise public policy. Cities and their state governments might cooperatively and publicly develop tax incentives to attract new industry to the core cities. Existing assessments and assessing procedures should be publicly reviewed to increase the likelihood of equitable assessments. The Advisory Commission on Intergovernmental Relations has long been recommending a legislative program to modernize the present anachronistic property tax administration arrangements.

State Restrictions on Taxing Powers of Urban School Districts

Most states have special taxing arrangements for their largest cities. Separate bodies of law frequently exist just for one or two cities. Large city school districts sometimes enjoy less fiscal discretion because of such special treatment by state governments, which have the power to authorize local school districts to levy taxes. These unequal state grants of taxing powers must be taken into consideration in studies of big city school finance problems. A study could examine what state restrictions currently exist—mainly restrictions unique to large cities but other restrictions as well—and attempt to assess the fiscal consequences of such restrictions on city school districts.

Measures of Local Fiscal Ability

Property valuation remains the principal indication of local taxpaying ability now in use, and on the average cities today still have higher assessed valuations per pupil than other school districts. In 1960, for instance, the assessed valuation per pupil in a sample of 14 large cities (including 9 of the 12 cities in this project) was $19,921, while for the United States as a whole, the average figure was only $10,953. Lest too much comfort be taken from those facts, however, assessed valuations per pupil *declined* during the past five years in 11 of the same 14 cities while this ratio was increasing in 8 of the 11 states in which those cities are located.

Furthermore, there is no question that unusually large concentrations of low-income families are clustering in core cities. Thus, while the median family income in cities is not always lower than in non-city areas, the proportion of city families with poverty-level incomes is decidedly higher in most cities than outside the city. This fact is directly recognized in state-financed municipal welfare services, but only rarely is it taken into account in school aid formulas.

It is well known that income and property represent different dimensions of taxpaying ability. Places high in one are frequently low in the other. Correlations of only .6 are common. This indicates that a simple property measure may not equitably measure actual ability.

States and cities anxious to improve the financing of urban schools—and that is the other side of the equity question: Should cities be treated preferentially?—should carefully examine measures of local fiscal ability other than property valuation. Household income and sales data should receive particularly close attention. Many cities might *benefit* directly in state aid payments if property valuations were not used as the only measure of local fiscal ability.

School Management

The policy-making processes by which big city school districts and states allocate resources need considerable streamlining. One of the most promising fiscal contributions to improving urban education is the program-planning-budgeting (PPBS) and cost-effectiveness approach to school budgets and accounts. I need not bore this audience with definition; suffice it to say that this approach requires the linking of goal-oriented long-range operations plans with budget and accounting classifications so that multiyear projections of expected program costs, and continuous analysis of actual costs, can be related to measurable benefits. Big cities and states have the scale of operation, the skilled manpower, and the *need* for this kind of analysis. While there are severe constraints on the applicability of present techniques of cost effectiveness analysis to education, is the alternative of continued ignorance about program costs and benefits acceptable? This may be an area in which we shall learn by doing, yet at the present time we are still congratulating each other on having thought of the idea.

Conclusion

How well city school districts will meet the challenges they face cannot be forecast accurately, but without fundamental reform of state and local fiscal structures, their future is less than bright. What is certain is that those responsible for financing city school districts are in the very center of the fray as this nation, magnificent in abundance and *munificent* in *ideology,* struggles in its city slums to save its own soul.

III. The Legal Element in School Finance

E. Edmund Reutter, Jr.

BECAUSE PUBLIC SCHOOLS are supported by public funds, all aspects of the financing of the public school operation are subject to the law. The obtaining and the spending of money are regulated by prescriptions and by proscriptions of law. The term "law" in the following discussion embraces not only legislature-made law, but also executive-made law, and judiciary-made law. The range in the legislative-executive sphere is from the federal Constitution to the rules made by the school business manager. In the judicial realm it is from decisions of one-judge trial courts to those of the Supreme Court of the United States. Basically, the case law promulgated by the courts is the most critical, for it is the most stable and it is supported by written rationales. Further, the courts amplify and interpret legislative and executive law in specific cases and decide controversies involving points where the legislature and executive have been silent.

Individual taxpayers generally have standing to bring suit on the local level to determine the legality of an expenditure of locally raised funds. In many states the same is true for state appropriations. On the federal level, as of this date, the Supreme Court of the United States does not permit such taxpayer suits. This ruling was enunciated by the Court in 1923 and is currently being challenged insofar as alleged infringements of freedom of religion are concerned. A decision by the Court by the end of the current term should indicate whether it is going to abide by its 1923 holding or modify it regarding taxpayers' suits.[1]

The grounds for a finance suit often cluster about the equal protection and due process clauses of the 14th Amendment and related state constitutional provisions. Public monies derive from private sources, and individual citizens are entitled to equal protection of the law. Also it is not in conformity with due process to tax for purposes not authorized by law. Therefore, expenditures on the local level by local boards must be for purposes expressly set forth in the state constitution, state statutes, or state-level regulations, or

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[1] *Editor's note:* On June 10, 1968, the Supreme Court of the United States in *Gardner v. Cohen* (36 U.S. Law Week 4540) raised the barrier of its 1923 ruling against taxpayer suits by holding that a taxpayer had standing to challenge the constitutionality of a federal statute on grounds that it violates the Establishment and the Free Exercise Clauses of the First Amendment.

for purposes necessarily implied by the express provisions. Further, the process of expenditure must conform to restrictions set up on the state level. In addition, the courts can be utilized to prevent the execution of arrangements which are manifestly "contrary to public policy."

Financial restraints also are implicit in the "establishment of religion" clause of the First Amendment and similar provisions in virtually every state constitution. The Supreme Court of the United States said first in 1947, and has repeated as recently as 1963, "Neither a state nor the Federal government can set up a church. Neither can pass laws which aid one religion, aid all religions, or prefer one religion over another." In applying this rule it is important to keep in mind that legally involved in "establishment of religion" is the spending of money directly or indirectly in either of two ways.

The first prohibited way is such that church-run schools would be provided services other than those afforded by general government to all organizations, that is, other than services such as police and fire protection. Funds for these items usually do not come from education budgets. However, some services paid for out of the education budget are not prohibited by the First Amendment and are permitted in some jurisdictions. Such services must be designed to benefit the child vis-a-vis the religious school. The so-called "child benefit" distinction is accepted by some state courts and rejected by others as regards state funds and state constitutional provisions. For example, the highest court of Oregon in 1961 proscribed the furnishing of textbooks to nonpublic schools. In 1967 the highest court of New York—in a case at present being considered by the Supreme Court of the United States—upheld the furnishing of textbooks in a 4-3 decision, the majority following essentially the child benefit line of reasoning.[2] From 1961 through 1967, one state has judicially allowed transportation at public expense to nonpublic schools and four states have judicially barred it.

The second constellation of expenditures proscribed by the "establishment clause" involves use of public-school teachers or buildings for religious objectives. Involved may be incidents such as a teacher's leading the class in prayer or a school building's being used for religious instruction by a clergyman. While the examples in this category do not involve large expenditures (indeed, may involve no expenditures which could be easily itemized), they do involve time of teachers paid from public funds and depreciation of a publicly owned and maintained building. And, of course, the legality of an expenditure is not predicated upon the amount of the expenditure.

Within the limits of federal constitutional restraints, the state has complete legal power over education within the state. It can determine not only how it will operate with local governmental units, but also whether it will have local units at all. It can determine the purposes and powers of such local units. It can control all elements of financial operation (within the limitations previously noted). Thus it can make local school boards fiscally dependent or independent (or anywhere along the continuum between); it can involve voter approval for expenditures as it sees fit; it can set tax and debt limitations.

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[2] *Editor's note:* On June 10, 1968, the Supreme Court of the United States in *Board of Education of Central School District No. 1, Town of East Greenbush et al. v. Allen* ruled that the statute requiring the loan of textbooks free of charge to pupils in parochial schools did not violate the Establishment Clause of the First Amendment. The Court concluded that the loan program was of financial benefit to the children and their parents and not to the sectarian schools (36 U.S. Law Week 4540).

Legislative and executive branches on the state level are bound by the state constitution. In some states, constitutional provisions restrict the legislative and executive branches in regard to the financing function. For example, there are some constitutional provisions in some states which require that certain funds be apportioned in certain ways, such as on a census-pupil basis or on a pupil in average daily attendance basis. In such situations the basic remedy is constitutional amendment. Constitutional amendment often being somewhat cumbersome, however, legislatures often can establish additional funds and distribute these in a manner to compensate for present-day problems caused by distribution of funds according to formulas placed in constitutions many years ago.

In my remarks today I am deliberately focusing on *legal* relationships in school finance. Let me say categorically that most of the barriers to better financing of education considered by many to be legal in nature are not really legal in a basic sense. Rather they are legal in the derivative sense that those who have made or administer the law have not acted, or do not act, with wisdom and understanding. Recent experiences in examining legal relationships between states and very large urban school districts have reinforced my former impressions that many problems which are semantically categorized as legal problems are better examined in contexts other than law. The methodology of legal research and investigation does not alone lead to solutions which are basically in the province of a substantive expertise. Financing of education falls into such a sphere.

Legal research will not answer such questions as whether categorical or general funding is preferable for accomplishment of a particular goal, whether grants should be matched, or how financial effort should be measured. The discipline of law will be of basic relevance only in the technique of legislative drafting on such issues as exemptions from taxes, taxing powers, checks on freedom of local school units to raise and spend money, and other matters of substantive interest to the fields of public and school finance. Professionals in those areas are the ones to determine that which is wise. It is a function of the legislative branch to enact statutes embodying wisdom. The accomplishment of this is political rather than legal.

It is the function of the executive branch to administer the law with common sense and flexibility and to expedite financial transactions. Problems of finance in this category need to be studied in a framework of bureaucracy rather than in a framework of law. Where the legislative and/or executive branches fail, the remedy lies at the ballot box. The judiciary cannot step in unless legislation is unconstitutional or there is attempt by the executive to thwart the purposes of the legislation.

It is important here to note for the record that everything in education has a price tag. Therefore, many state statutes and the rules and regulations of the state board of education and of the state executive for education do affect school districts financially, indirectly if not directly. This may be good or bad, depending on one's point of view and on the specifics involved. I refer to the general areas which might be labeled curriculum, staff personnel, pupil personnel, and property. Too frequently, I fear, state-level agencies, from the legislature down through the operating personnel in state departments, place restrictions on local units, or demands on local units, which involve either more local funds or changes in allocation of funds without the state-level agencies giving enough attention to the financial considerations. Many—I would be willing to say most—of such requirements are well intentioned and would be beneficial to children. Their mandatory imposition without additional funds or an appreciation of the funds involved, however, not infrequently causes local school districts to have to readjust other programs to get the money for mandatory ones.

Before closing these remarks to this particular group today, I should like to mention a few substantive legal developments that are at the moment in the judicial process and which could eventually have rather profound implications for the financing function in the public schools of all states. I have already referred to the fact that the Supreme Court of the United States should render decisions within the next two to three months on the question of textbooks for nonpublic schools (the New York case) and on the standing of a taxpayer to bring suit to challenge alleged infringement of the First Amendment by federal government appropriations. (The Elementary and Secondary Education Act is the key one which will be tested in the courts if the Supreme Court grants taxpayers the right to bring such a suit.)

Of considerable potential import is the holding of a three-judge federal court in Virginia on February 6. The court issued an injunction against Virginia's plan for computing state aid in public school districts. Being contested was the fact that Virginia had a statute reducing state assistance to school districts which received federal "impacted area" aid. Withheld from districts receiving such aid was fifty cents of state funds for each dollar received in federal aid. The court found that this practice thwarted the intent of Congress and thus was barred under the constitutional doctrine of federal supremacy. In addition, the equal protection of the laws provision of the Fourteenth Amendment was invoked. The decision was unanimous, and appeal is only to the Supreme Court of the United States.

Another suit just under way has the possibility of establishing a legal point which, should the arguments of the plaintiffs be accepted, would affect public education more drastically than perhaps any decision in history. The Board of Education of Detroit and a number of individual plaintiffs are bringing suit to change the method of distribution of state aid to education in Michigan. It is claimed essentially that the equal protection clause of the Fourteenth Amendment is violated because the state aid formulas do not appropriately compensate for problems faced by children in districts of the state which are low in ability and/or are restricted by tax limitations. The general idea is that a child's right to equality of educational opportunity should not depend on where he lives within the state or on the economic condition of the locality in which he lives. It is contended that the state constitution (and this would probably be applicable in one way or another to all states) establishes an educational system, and the Fourteenth Amendment of the federal Constitution requires everyone to have equal access to that education.

Giving encouragement to plaintiffs' position are three lines of cases decided by the Supreme Court of the United States in the last decade and a half. The first cluster comprises the rulings in the desegregation cases. Therein, because "separate educational facilities [maintained by law for different races] are inherently unequal," the state must correct the condition. Also there have been moves by several lower federal courts to apply the equal opportunity premise to school districts which are segregated *de facto* and where the facilities are not equal on bases of teachers, buildings, and the like. (The new HEW Guidelines give executive sanction to this view.)

The second line of reasoning is that developed in the series of cases providing that indigent prisoners have a right to legal counsel at public expense. One's rights to constitutional protections in the area of criminal law are not dependent upon the ability to pay an attorney, according to this line of reasoning.

The third group of cases has dealt with reapportionment and the "one man-one vote" doctrine. The gist is that a man's vote should count approximately the same regardless of the political unit within the state in which he happens to live.

In the eyes of this observer it is not unreasonable to anticipate a type of decree which would be similar to those in reapportionment cases. Should this interpretation ultimately be given by the Supreme Court of the United States, it would affect virtually every state at least to some extent, as did the reapportionment decisions. (Of course, the Supreme Court of the United States might not take the case; but even in such an instance, the reasoning of the Supreme Court of Michigan, if it favors the plaintiffs, could be most persuasive in other jurisdictions.)

In concluding let me emphasize that there is a legal ingredient in every decision affecting educational finance. In some instances the legal element is controlling; in others it is relatively minor. To ignore the legal aspect would be foolish, as well as dangerous. On the other hand, to be preoccupied with the legal consideration is to stifle initiative. If the law is indeed blocking a good idea in finance, the law should be changed; for, after all, the law is the servant of society, not its master. The law serves society, and thus changes should be made in it to reflect changes in society. Analysis of supposed legal barriers to good financing of education, I believe, would indicate that some of the supposed barriers are actually not there. Those that are real can be removed through a method appropriate to the level of the law in question. More attention, I believe, should be given, however, to the other side of the coin, namely, the use of the law as a positive force in achieving educational goals. To fail to use the law in this fashion is to fail to use an important weapon for improvement for education and for society in general. If we who are interested in the area of public school finance cannot master the legal ingredient, "the fault is not in our stars, but in ourselves."

Planning for Educational Development in a Planning, Programming, Budgeting System

Selma J. Mushkin and *James R. Cleaveland*

I. What Is a PPB System?

THE PRESENT PAPER is prepared in response to the frequently posed question of legislators, school administrators, and school boards:

What is a PPB system and what does it mean for education?

Planning, programming, budgeting (PPB) as an integrated system is gaining widespread use because of the growth in public expenditures and the consequent urgency of asking:

How better—more effectively and efficiently—can available resources be allocated among competitive uses?

Tax resources and the resources of men and material needed in support of public services are clearly not unlimited, and the demands on those resources are many. Education, as a major component of public expenditures, now claims a principal share of tax resources. And in view of the role assigned to education in meeting current economic and social problems, further expansion in educational spending is projected.[1] In addition to economy and efficiency in program operations, current national problems point also to concern for greater equity in the use of tax resources for the attack on poverty and the education of the disadvantaged.

Public officials, school boards, school administrators, teachers, and parents all contribute to school policy. Each of these groups is concerned with the public product produced—its quantity and quality—by the school and its progress toward satisfying the purposes of educational spending.

Implicit in a PPB system is a continuing process of review and analysis of all programs and activities of a school system. On-going programs as well as new programs are considered. This review of the total operation in line with the current objectives of the schools is perhaps the best defense against obsolescence. A PPB system can help to facilitate better public decisions on use of resources by providing policy makers, whether at the

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[1] Mushkin, Selma J., and McLoone, Eugene P. *Local School Expenditures: 1970 Projections.* Chicago: Council of State Governments, 1965. 84 p.

legislative or executive level, with the information required to sort out choices and to help define the choices. While PPB has been addressed largely to executive decision making, the processes of PPB can also be applied to facilitate the critical decisions of the legislators.

PPB and the legislature—Implementation of a planning, programming, budgeting system in the executive branch of the government would provide legislators with more data about program proposals submitted to them and better documentation of budgetary requests. It thus would provide legislators with the informational materials required for a greater understanding of the policy problems and the alternative approaches to them. The legislatures may have an independent analysis staff. Such a unit would aid in review and assessment of the informational materials provided to the legislature by the executive. It would permit careful evaluation of program trends and enable the legislators to propose effective alternatives to those submitted by the executive departments and agencies.

Federal encouragement—The growing need for program planning and evaluation as a management tool has encouraged states and localities, as well as educational authorities, to begin the process of implementing such a system. This encouragement has been augmented by the emphasis of several of the recent federal aid programs on planning and on program evaluation. The Elementary and Secondary Education Act, for example, now seeks to encourage integrated planning of education, the development of objective measures of program consequences, and the testing of programs in terms of these objective measures.

An intergovernmental demonstration—Five states, five cities, and five counties have undertaken to work together through the initial stages of a PPB system and to reassess intergovernmental program problems within this framework. This 5-5-5 Project, financed by a grant to The George Washington University from the Ford Foundation, as a demonstration, is providing information on the processes, the potentials, and the issues involved in instituting an integrated system for planning public services and the facilities to provide them. The states participating in this demonstration are California, Michigan, New York, Vermont, and Wisconsin; the cities are Dayton, Denver, Detroit, New Haven, and San Diego; the counties are Dade (Fla.), Davidson (Tenn.), Los Angeles (Calif.), Nassau (N.Y.), and Wayne (Mich.).

A PPB System Defined

A PPB system is an integrated system to provide executive and legislative officials with better and more information for planning programs and for making choices among the optional ways funds can be devoted to achieve governmental objectives. It aids the decision-making processes in helping find new ways, through analysis and evaluation of public programs, of doing the public business faster, better, and less expensively.

Analysis and program evaluations that are central to the implementation of a planning, programming, budgeting system require identification of the public products that society desires. Such identification of public goods and services marks a shift in emphasis. The question of whether there should be 30 or 20 pupils per teacher is replaced, for example, by how much of what type of learning do we want in our schools. Analysis requires that activities be considered as they relate to each other, some complementary, some competitive. The search for alternative ways of meeting defined objectives makes PPB a socially innovative system. Also considered are the optional ways of combining, for example, teaching staffs, teacher aids, facilities, and teaching materials, to effect the product desired. The important question routinely asked in the course of implementation of a PPB system is:

How much additionally would be gained or lost by way of achieving the defined objective through spending more or less for the purpose?

Better staff analysis and program evaluation will reduce some of the pressures on public officials that originate in failure to consider program consequences ahead of time.

An integration of familiar techniques—Within a PPB system the familiar processes of program development and of budgeting are explicitly combined. It is a system in the sense of centering on program analysis in the light of explicitly defined objectives. It calls for program plans that can carry out these purposes and for budgetary requests that can help implement the planned programs. It is a system, too, in another sense, in that it calls for the identification of all activities that relate to the achievement of a defined objective. For example, it calls for the identification of the range of programs that are a part of achieving learning in the amount and of the type desired, even though not all of these programs are carried out by the traditional "educational" agencies.

The newness of PPB arises not from the individual techniques that have been developed but from their integration into a system and their procedural application to government decision making. These techniques have zeroed in on the preparation of a series of documents that are major tools of a PPB system. They are enumerated here:

1. The program structure and statement of objectives
2. Program analyses (cost-effectiveness analyses) and memoranda
3. The multi-year program and financial plan.

In the preparation of these documents the PPB system requires:

1. Clarifying and specifying the ultimate goals or objectives of each activity for which a government budgets money
2. Gathering contributing activities into comprehensive categories or programs to achieve the specified objectives
3. Examining as a continuous process how well each activity or program has done—its effectiveness—as a first step toward improving or even eliminating them
4. Analyzing proposed improvements or new program proposals to see how effective they may be in achieving program goals
5. Projecting the *entire costs* of each proposal not only for the first year but for several subsequent years
6. Formulating a plan, based in part on the analysis of program cost and effectiveness, that leads to implementation through the budget.

Statement of Objectives and Program Structure

The program structure reflects decisions on the goals and objectives that are being sought through the government. Essentially it represents a classification of activities and programs in accord with the goods and services produced to achieve the defined objectives. Formulation of basic objectives, goals, missions, or purposes thus becomes an initial phase of implementation of a PPB system. Such goals or objectives are not value free. On the contrary, they reflect the value judgments of those who represent the public. There is, accordingly, no single perfect model of a program structure that encompasses all functions. Indeed, there are many ways of classifying programs even for a single set of defined objectives.

The program structure is intended to highlight the basic objectives and to display the competing and complementary activities involved in carrying out such objectives. It provides the framework for analyzing programs and for the preparation of a multiyear program and financial plan.

Essentially the defining of objectives of a governmental jurisdiction provides answers to a set of questions such as the following:

What needs doing and for whom?
Why is each activity currently performed being performed?

The program structure itself displays a hierarchy of program activities. At the topmost levels are the broad categories that reflect the programs designed to achieve the fundamental objectives of the government. The second and lower levels display progressively narrower groupings serving more limited objectives. As the categories become narrower in scope at the lower levels, the structure sets forth the complementary and/or substitute approaches to the fundamental objectives at the highest levels in the structure. The lowest levels of any structure would be composed of activities and programs that are intended as specific means for moving toward the larger objectives.

The display of programs in relation to objectives provides information on programs different in some ways from that contained in budget documents now submitted to legislatures. In many cases, budget documents are "line" item budgets rather than program-oriented budgets; full program costs do not always appear in the same budget category.

Implementation of a PPB system does not require that the budget format be altered, but it does require that for programming purposes expenditures be grouped in terms of program objectives rather than in terms of the items bought. In some jurisdictions budget formats have been altered.

A line item budget may show the following items with little regard to the purposes being served:

Salary and wages
Contractual service, supplies, and materials
Equipment purchases by type
Employees' retirement
Workmen's compensation.

Such a listing conveys little information about why employees are on the public payroll, why supplies are purchased, or what groups in the population benefit from the outlays. If in addition to, or in place of, such line item information, a display shows the amounts expended in relation to objectives, those officials concerned with program policies would have before them information on expenditures according to purposes, for example:

Job training and placement
- —Formal vocational training
- —On-the-job training
- —Occupational counseling
- —Employment exchange information

If in addition to such figures on expenditures, data are presented on program outputs that serve to display the volume or quality of the services provided, an additional range of supportive materials is given the decision maker. He would have set forth before him the number of persons being trained for jobs, receiving formal school training, participating in on-the-job training or in joint school-industry training, assisted in selecting training, receiving employment information, and those who on completion of their training are employed at specified earnings levels.

Program Analysis—Costs and Benefits in Alternatives

A PPB system is a unifying and comparing process. On the one hand, consequences are assessed in terms of costs, both those that are immediate and those that are implicit for subsequent periods as a result of immediate action. On the other hand, they are assessed in terms of benefits or program effectiveness. The arraying of cost and effectiveness for various program alternatives provides information required for decision.

Analysis essentially involves a reduction of complex problems into their component segments so that each segment can be studied. Questions of fact can be subjected through this process to the test of observed experience. Those aspects of the problem that involve value judgment can be separately identified and the basis of the judgment made explicit.

On the one hand, a cost-effectiveness analysis may use, if applicable, many of the techniques of mathematics, operations research, economics, etc. On the other, cost-effectiveness analysis may require no more technical sophistication than the pulling together of already existing data in a meaningful and informative way. Analyses may also draw upon various technical and nontechnical studies previously done which are relevant.

Recommendations made on the basis of analysis within the procedures of a PPB system are presented in policy papers termed "program memoranda." The "program memo" is a document covering one major program area or a major portion of a major program area. Its purpose is to present major program policy findings, specific recommendations, and the reasons for these recommendations, including a summary of the analyses that have been made. It is submitted prior to detailed budget preparation.

Linking Planning and Budget Decisions (The Multi-Year Program and Financial Plan)

A PPB system makes long-range fiscal planning a routine for government. The analysis of programs that provide the information for decision includes an examination of effectiveness over a period ahead and of cost implications for that future period. Programming is thus given a time perspective that adds to the informational base available to the decision maker. A summary of the decisions taken on public outputs and costs, at first tentatively and later for legislative budget action, is included in the Multi-Year Program and Financial Plan, one of the principal documents of a PPB system. It consists of two parts:

1. A multi-year financial plan that displays the estimated funding required (including both operating and capital requirements) for each program category for each of a number of years (usually about five) into the future

2. A multi-year program plan that is essentially a descriptive table displaying selected characteristics of each program category in order to indicate the size and scope of the program and, wherever possible, its expected accomplishments.

The multi-year program and financial plan is of particular importance at two major points in the program planning cycle.

1. The first major function of the plan is in the program analysis phase of program planning. A tentative summarization of all initial individual program decisions provides the basis for an examination of the fiscal feasibility of the over-all decisions. For example, it is likely that the tentative set of individual program decisions, when summarized in a multi-year financial plan format, will indicate a requirement for funds that is out of reach either in the current budget or in subsequent years. Revisions of the program decisions that make up the first tentative summary would then be needed.

Such a tentative summarizing does not necessarily imply that programs should be planned only to the extent that their revenue sources are *currently* authorized. The governmental jurisdiction may choose to plan for a level of expenditure exceeding that which can be raised under current revenue provisions. But the question of revision of the revenue structure will be clearly posed.

2. The plan plays its second major function after the budget has been approved by the legislative body and a revised multi-year plan is prepared to reflect the latest decisions. The plan then becomes the "base," or "baseline" displaying the jurisdiction's current multi-year plan. As such, it would provide "planners" at all levels with a perspective as to what the organization is doing and where it is headed. It also becomes the composite program "plan" to which future program proposals should be compared.

The Centralization or Decentralization of the Procedures

In some instances state governments have placed initial responsibility for developing objectives and the output-oriented categorizations of activities on departments and agencies. In others the initial dialogues with policy officials to define these objectives have been conducted by central staff. In almost all local communities the initial identification of goals and objectives has been the responsibility of a central staff to the mayor or county manager. An integrated system, if it is to perform as a system, points to central staff participation in the formulation of public service objectives. Classification of activities by purpose within the basic objectives similarly requires identification and grouping of all activities that serve a common objective even though the activities are administered by different agencies.

Qualifications of PPB as a tool—PPB cannot provide the answer to every question which an official may want answered before making a decision. Responsible decision making will continue to rest on political judgment. And it cannot deal with all government's problems. It does not address such problems as assessment of work efficiency, manpower selection, or administrative procedures.

PPB and analyses of costs and effectiveness of public programs can help by facilitating better decisions. The thrust of the system is to encourage a conscious process of choice, supported by an adequate factual base. The productiveness of systematic analysis depends upon the policy maker who uses it, whether at the legislative or at the executive level.

In short, a developed PPB system will make better information available so that government may become not only more efficient but also more responsive to the needs and desires of the people.

II. "Learning" as a Product of Government

WE ASK IN THIS SECTION:

How may educational activities be grouped within a government-wide program structure in an integrated planning, programming, budgeting system? What are the key objectives of education? What are the purposes of specific programs carried out by school systems?

There is no "right" way of defining the "objectives" either of education or of school systems, but we have assumed "learning" as the central purpose of education and the schools.

Public education claims the largest single part of the civilian tax dollar. This priority is no accident; it reflects the importance society places on the unique learning capacity of people and on transmitting its values and stock of knowledge.

In what follows we show how the objective learning might fit into a program structure of government and then show within this objective a possible classification of programs which promote the many purposes of learning. In this way we display a framework within which to make more informed policy choices for education.

Products or services produced by government may be classified in accord with many differing themes. A jurisdiction may, for example, take as its major theme the development of man's potential as underscored in a statement by Professor Kenneth Boulding of University of Colorado:

> It must never be forgotten that the ultimate thing which any society is producing is people. All other things are intermediate goods, and all organizations are intermediate organizations. No matter how rich we are or how powerful we are, if we do not produce people who can at least begin to expand into the enormous potential of man, the society must be adjudged a failure.

Development of Man's Potential

The formulation of objectives and grouping of public programs in accord with a selected theme, such as "Development of Man's Potential," may be defined further by structuring programs in terms of the age groups in the population to which they are directed as shown in the following example:

Theme: Development of Man's Potential

I. Developing Children in Their Early Years

II. Developing Children and Youth

    A. Developing intellectual capacity

- B. Maintaining and improving physical and emotional well-being
- C. Maintaining and improving family environment
- D. Maintaining and improving neighborhood environment
- E. Correcting malbehavior and protecting the public

III. Realizing the Potential of Working-Age Groups
IV. Realizing the Potential of the Aged
V. General Support and Administration

We have listed a few illustrative classes of program objectives within the category, "Developing Children and Youth," the primary age group for whom formal education is carried out; for other age groups in the population, similar subcategories are called for in elaborating the range of programs of governments.

Public Investment for Economic Growth

Another formulation of a central theme is that of public investment for economic growth in which the range of public investment is set forth in accord with the various factors contributing to such growth, including human resources, physical capital resources, and natural resources. All government activities might be grouped as follows:

Theme: Public Investment for Economic Growth

I. Investment in Human Resources
   A. Health
   B. Learning
II. Economic Growth—Industrial Supports
III. National Resource Conservation and Development
IV. Promotion of Community Development
V. Environmental Improvements and Safeguards
VI. General Administration and Support

In this grouping, learning is one of two major products that contribute to human resource investment as a source of economic growth; good health is the other. Because of the importance of economic growth to the over-all resources available for public and private use and enjoyment, emphasis is frequently placed on investment, both in people and in things. Education's major role as a source of growth is now widely accepted. Much weight is given to this investment role in designing educational programs.

Consumer Services

Still another illustrative theme views governmental services as a series of consumer goods. In fact, the application of the processes of a planning, programming, budgeting system to government is intended to provide analyses of goods that are comparable to the consumer's evaluation of his options for spending his funds. The context of application of the processes of the system to alternative use of resources tends to emphasize this consumer services theme.

Learning in this context is basically a consumer good which society purchases collectively with its taxes, rather than purchasing it on an individual basis in the market place.

Theme: Fundamental Public Consumer Services

I. Personal Safety
II. Health
III. Learning
IV. Satisfactory Home and Community Environment

V. Economic Satisfaction and Employment Opportunities
VI. Satisfactory Leisure-Time Opportunities
VII. Transportation-Communication-Location
VIII. General Administration and Support

We have not shown subcategories for the learning objective in this array of public goods. The subcategories are displayed, however, in a subsequent section of this paper.

Products of the School System

Thus far the illustrations have been confined to showing the purpose, learning, in accord with various themes for grouping governmental programs by basic objectives. We turn now to the second question, namely, the products of the school system.

Learning is surely the most important but not the sole product of the school system. How about the other services which a school provides? How might school health, lunch, community programs, and traffic controls be shown in such a structure? In short, how do we show the non-learning outputs of the school system in a program structure for the whole of government?

The illustration below shows how one might array these non-learning functions of schools by the final objective which each promotes. We have taken as a starting point of the program structure the first seven categories of the Public Consumer Services theme displayed above. The school may contribute to personal safety through provision of civil defense facilities, school safety patrols, and assistance to law enforcement agencies; the school may contribute to health through control of infectious diseases, school nursing, health screening, and school treatment programs; etc. Under Item III would be found the chief outputs of schools which for reasons of simplification we delay discussing to the following pages which develop the activities and outputs related to learning.

The Program Outputs of Schools

I. Personal Safety (Protection from Personal Harm and Property Loss)
    Community civil defense facilities
    Safety patrols
    Assistance to law enforcement agencies
II. Health (Physical and Mental Well-Being)
    Control of infectious and contagious disease
    School nursing
    Health screening programs
    School treatment programs
III. Learning
    (Basic mission)
IV. Satisfactory Home and Community Environment
    Schools as a community facility
    Intra-community relations
V. Economic Satisfaction and Employment Opportunities
    School welfare programs (clothing distribution, etc.)
    School meals programs
    Career opportunities (included essentially in III above)
    School-work programs (included essentially in III above)
VI. Satisfactory Leisure-Time Opportunities
    Recreational services

VII. Transportation-Communication-Location
  Traffic controls
  School transportation facilities

Classifying Learning Outputs

For convenience of discussion two routes to learning may be distinguished: experience and education. Education in turn is carried out informally through public communication and family and other personal relationships and formally through the school program. Since we are concerned here primarily with outputs of a public service, namely, educational services, we shall concentrate on the latter. However, we must be mindful that throughout life, experience will complement and often substitute for the learning processes of formal education. We have tried to illustrate this relationship on Chart 1 where the word *experience* is placed in a box with dotted sides. We have also shown informal education processes in the same way.

The chart shows how learning as one of the basic outputs of government fits into the consumer services theme above. It distinguishes the learning services provided to different age groups.

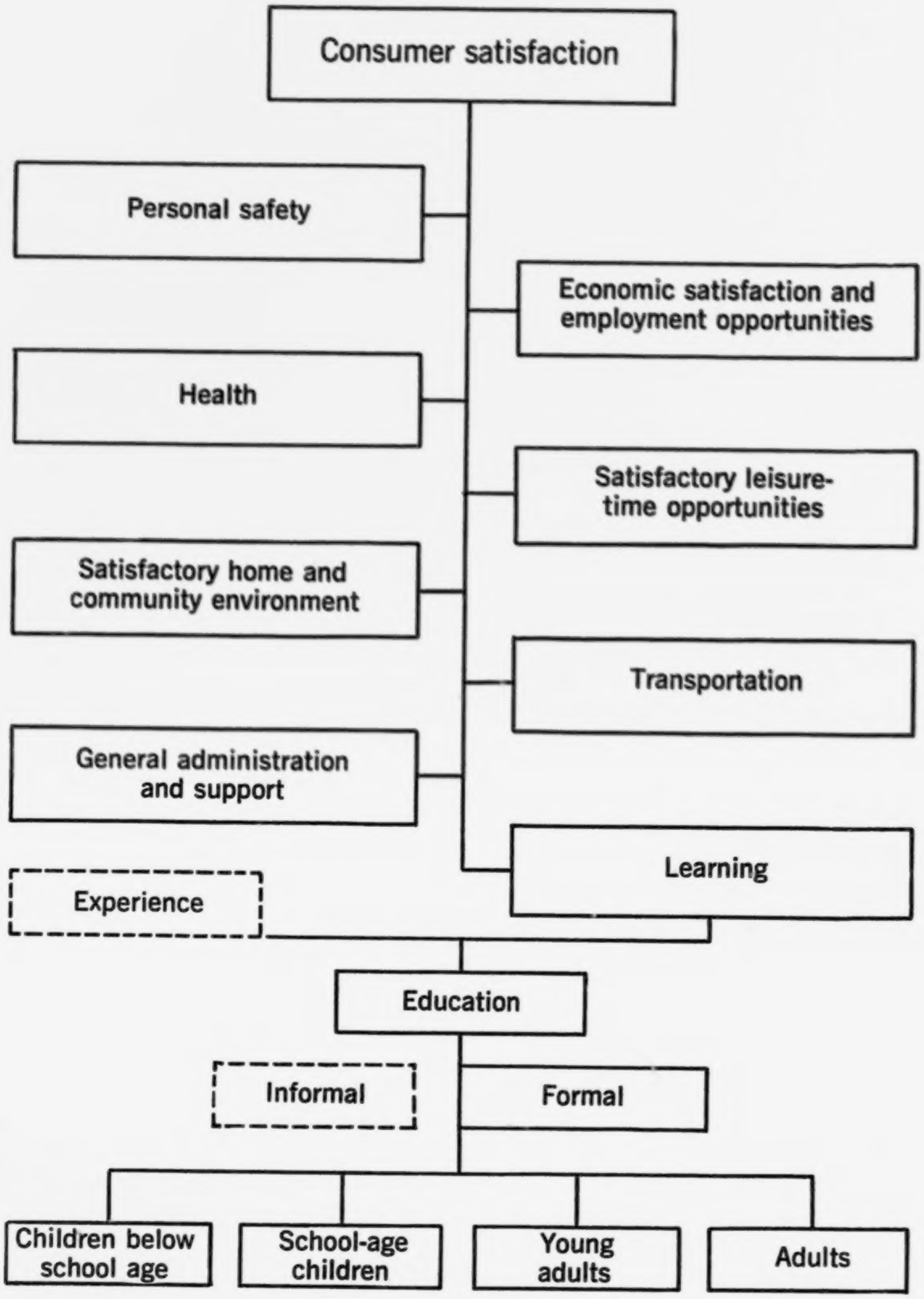
In Chart 2, "Learning Through Formal Education" is subclassified further to group all the activities undertaken to achieve a learning product, according to three major types of learning that are being sought: (a) the development of basic skills, (b) the development of moral and social skills, and (c) the development of individual fulfillment skills. Educational activities directed to school-age children and youth can be divided into these three categories, each descriptive of fundamental objectives.

The basic skills on the left are those skills necessary to the development of children and youth into independent and self-sufficient persons. In addition to skills involved in caring for one's physical self there are the language arts, computational, and reasoning skills basic to economic independence capped off by specific employment skills. In the center box are "Moral and Social Skills" through the acquisition of which the individual is prepared for living with others, in the family, in small groups, and in society. Finally on the right are "Individual Fulfillment Skills" through which the individual gains the intellectual experience and training that will permit him to identify and realize his own potential. Included within this range of skills are those services that permit an individual to receive advice and counseling that will buttress through information his ability to choose, and to acquire the necessary learning.

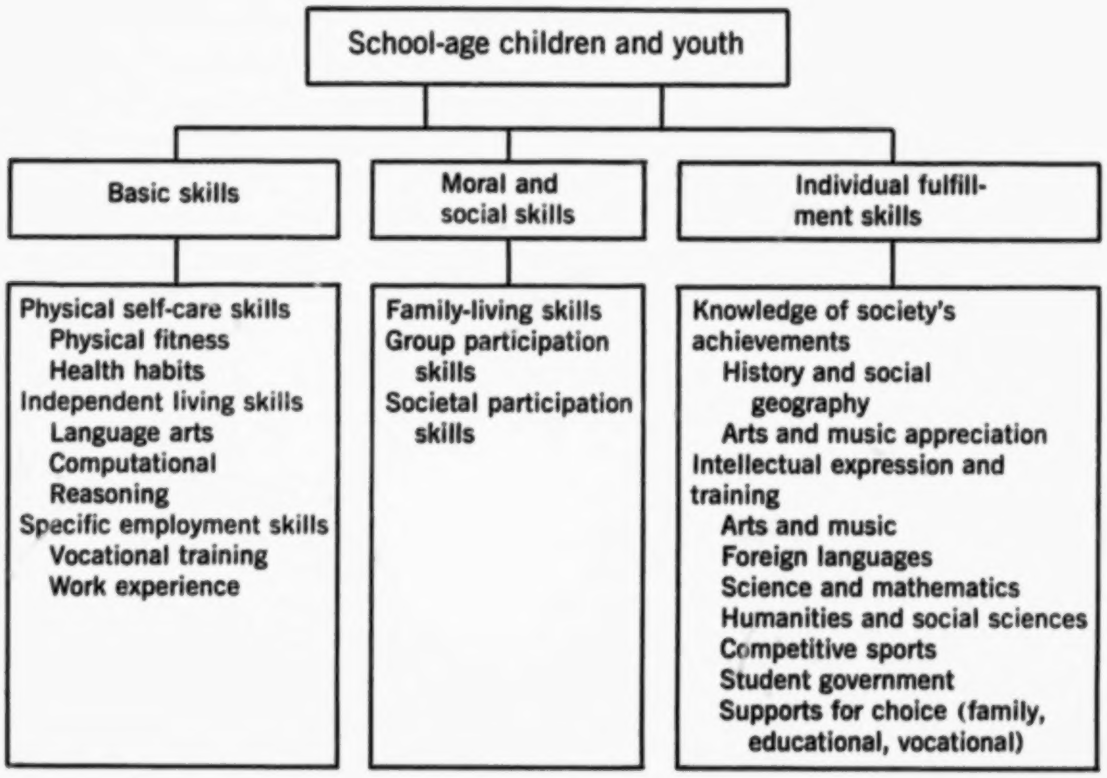
Further Classification

The special services required to promote learning of (a) basic skills, (b) moral and social skills, and (c) skills leading to individual fulfillment among groups of children would be identified within a program structure. Such identification helps to flag the multiple layers of objectives that are being pursued, partly in the interest of efficiency and effectiveness, and partly out of concern for fairness or equity in distribution of public funds. The distinguishing of the categories presented in Chart 3 is *not* intended necessarily to suggest the desirability of separate programs for each of the groups but rather to list the target groups of children for whom services need to be considered and evaluated. Further subcategories would be intro-

1. Program Categories Display


Consumer satisfaction
Personal safety
Economic satisfaction and employment opportunities
Health
Satisfactory leisure-time opportunities
Satisfactory home and community environment
Transportation
General administration and support
Learning
Experience
Education
Informal
Formal
Children below school age
School-age children
Young adults
Adults

2. Learning Through Formal Education


School-age children and youth
Basic skills
Moral and social skills
Individual fulfillment skills
Physical self-care skills
Physical fitness
Health habits
Independent living skills
Language arts
Computational
Reasoning
Specific employment skills
Vocational training
Work experience
Family-living skills
Group participation skills
Societal participation skills
Knowledge of society's achievements
History and social geography
Arts and music appreciation
Intellectual expression and training
Arts and music
Foreign languages
Science and mathematics
Humanities and social sciences
Competitive sports
Student government
Supports for choice (family, educational, vocational)

duced in practice in evaluating the services; for example, groups of mentally retarded would be divided showing those that are educable; children from low-income families, rural or urban, would be classified to identify those from Spanish-speaking families, from American Indian families, and Negro and other ethnic groups.

Learning in an Output Oriented Program Structure

A composite of the illustrative categories that have been discussed is shown in Chart 4. This chart combines in a single display the program categories and subcategories set forth earlier, and also indicates that interrelationships between selected public services have to be considered because together they contribute to achieving a single public objective.

We have carried through as an illustration the classification of a portion of a program structure—that part oriented to the product learning. In the preparation of such a structure each of the categories would need definition so that expenditures made for each product could be identified and recorded. The format, moreover, provides the basis for displaying projected outputs and the costs that would be incurred in achieving them for a period of time ahead.

There is no tidy and precise way to sort out where each specific activity that is undertaken in carrying out a set of objectives belongs within a program structure. Activities and the expenditures made in carrying them out frequently may be grouped under more than one category. The need for definition is thus underscored.

An Example of a Program Descriptive Statement

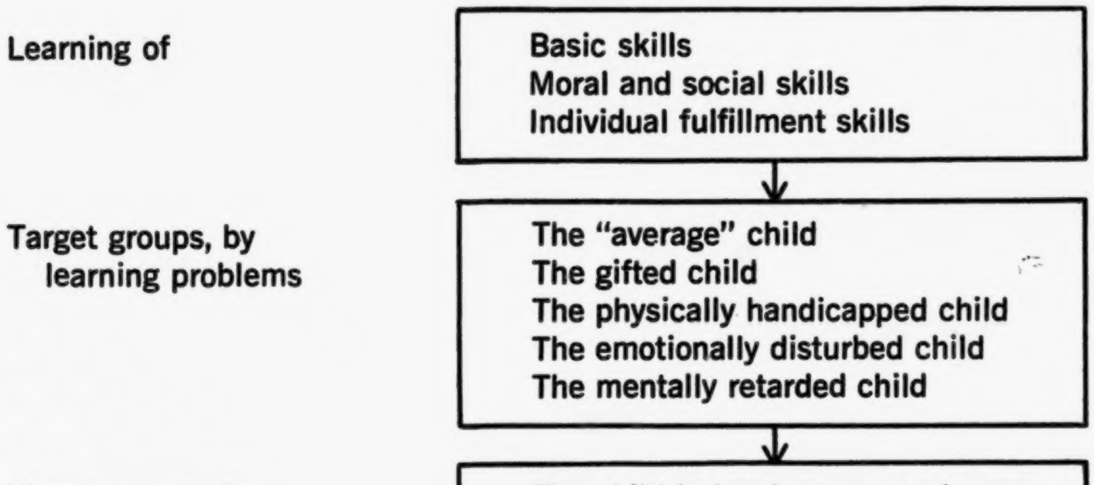
To provide an example of an outline of a descriptive statement on objectives and definitions of educational services, we have followed through on the illustration given earlier. While the outline is not as comprehensive as would be needed for a fully operative programming system, it does serve to show the kinds of information that would be displayed for the public officials. Chart 5 presents this example in a highly summarized form on pages 73-76.

Summary

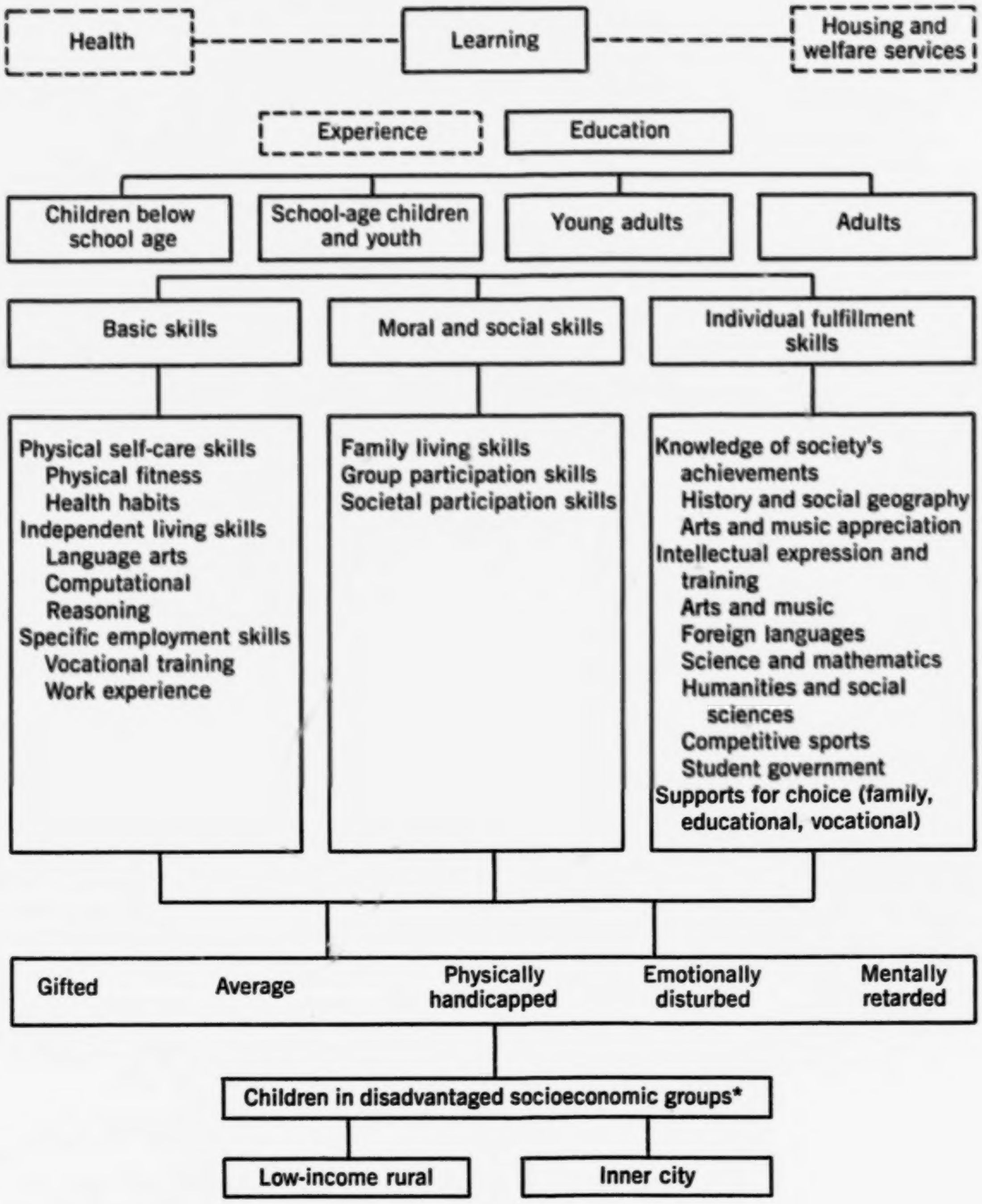
We have tried in this section to present various ways in which the broader purposes of governments may be classified in terms of their objectives, indicating first how learning, the objective we have selected to emphasize, might fit into a program structure for government. We have also attempted to show by example how the activities of the school system would be grouped within a government-wide program structure. We have elaborated further the groupings of various activities that contribute to learning, distinguishing in general three types of learning products that are sought and the types of activities that contribute to each.

The information that would be presented in this type of display for pur-

3. Target Groups Identified


Learning of
Basic skills
Moral and social skills
Individual fulfillment skills
Target groups, by learning problems
The "average" child
The gifted child
The physically handicapped child
The emotionally disturbed child
The mentally retarded child
Target groups, by socioeconomic status
The child in low-income rural areas
The child in inner city

4. Learning in an "Output" Oriented Program Structure


Health
Learning
Housing and welfare services
Experience
Education
Children below school age
School-age children and youth
Young adults
Adults
Basic skills
Moral and social skills
Individual fulfillment skills
Physical self-care skills
Physical fitness
Health habits
Independent living skills
Language arts
Computational
Reasoning
Specific employment skills
Vocational training
Work experience
Family living skills
Group participation skills
Societal participation skills
Knowledge of society's achievements
History and social geography
Arts and music appreciation
Intellectual expression and training
Arts and music
Foreign languages
Science and mathematics
Humanities and social sciences
Competitive sports
Student government
Supports for choice (family, educational, vocational)
Gifted
Average
Physically handicapped
Emotionally disturbed
Mentally retarded
Children in disadvantaged socioeconomic groups*
Low-income rural
Inner city

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* These groupings are not intended to represent separate activities but to flag groups that should be considered in evaluation of program options.

poses of illuminating the program decisions taken and funds requested is by itself a significant forward step. In making the selection to illustrate product orientation, we were not unmindful that funds generally are not budgeted in terms of activities as we have outlined them, nor are we unmindful of the fact that educational expenditures are not routinely accounted for in these ways. New estimates would be needed in order to quantify the resources devoted to each activity category shown.

It needs to be emphasized in conclusion, however, that the classification or grouping of educational activities depends on objectives.

5. Objectives and Definitions of Educational Services

DEVELOPMENT OF BASIC SKILLS

Objective: Sequential Development of independent and self-sufficient persons through educational levels

Definition: Activities that contribute directly to developing capacity needed for independent existence

Skills in caring for one's physical self

Objective: To prepare the individual for self-sufficiency

Definition: Activities that enhance the individual's competence to take care of himself

- Physical fitness skills
  - Physical education
- Health habit skills
  - Health screening (hearing, mental retardation, sight)
  - Referrals and case follow-ups
  - Health education
  - First aid and life-saving instruction
  - Personal hygiene instruction
  - Sex education
  - Instruction in dangers of tobacco, alcohol, and narcotics

Skills basic to independent living

Objective: To develop the general skills that are pre-conditions for employment

Definition: Activities that sequentially develop basic skills for independent living

- Language skills
  - Reading instruction:
    - English as a second language (when necessary)
    - Tutorial and remedial reading (when necessary)
  - Spelling

    - Elements of English courses
    - Oral expression
    - Grammar
    - Composition
    - Debate
- Computational skills
    - Arithmetic operations
    - Non-whole numbers—decimals, fractions
    - Basic applied mathematics
- Reasoning skills
    - Introductory natural sciences
    - Basic behavioral sciences
    - Introductory abstract reasoning—algebra, geometry
    - Syllogism as dealt with in English courses

Skills basic to specific employment

Objective: To prepare the individual for specific employment

Definition: Activities that develop special competencies for employment

- **Vocational skills development**
    - Vocational shops
    - Business courses
    - Technical courses
    - Occupational training for groups with special health problems (retarded, physically disabled, etc.)
- **Work experience development**
    - Apprenticeships
    - On-the-job training
    - Neighborhood Youth Corps
    - School-work release

SOCIAL AND MORAL SKILLS

Objective: To transmit society's fundamental values in order to facilitate group living

Definition: Activities that provide group living experience; that transmit knowledge of behavior required for inter-personal and inter-community adjustment; that give a sense of moral values to the individual; that check amoral and anti-social behavior

Family living skills

Objective: To transmit concepts of family living

Definition: Activities that reinforce the general pattern of home life and that provide a basis for acquiring group participation skills

- Homemaking
- Opportunities for one-to-one personal working and play relationships

Group participation skills

Objective: To transmit moral precepts and concepts of group participation

Definition: Activities that involve instruction and experience meant to facilitate group participation and individual functioning within groups

- Play and other group recreation
- School social activities
- Racial relations programs
- Clubs and other quasi-formal groups

Societal participation skills

Objective: To develop a knowledge and appreciation of the societal environment and how to participate in it

Definition: Activities that are intended to expose the individual to his societal environment and to promote his participation in it

- Civics
- Geography
- History—American and general
- Student government
- Trips to observe governmental activities
- Speakers representing government and community organizations

INDIVIDUAL FULFILLMENT SKILLS

Objective: To achieve awareness of the range of human endeavor and gain full self-realization

Definition: Activities designed to develop the individual's understanding of society's achievements and appreciation of himself, his capacities and competencies, and to motivate him and give him the opportunity for self-development

Knowledge of society's achievements

Objective: To achieve an awareness of the range of human endeavor and its development

Definition: Activities that transmit a knowledge and awareness of the achievements of mankind and the importance of thought and creativity

- General study of:
  - History
  - Social geography
  - Arts and music appreciation
    - Attendance at art and music events

Intellectual expression and training

Objective: To draw out and broaden individual capacity and talents

Definition: Activities that (a) enrich the regular school program, (b) provide opportunities for creative expression and for elevating the dignity of the individual, and (c) develop leadership talents

- Arts and music (including performing arts)
  - Dance—ballet, folk dance, etc.
  - Drawing, etc.
  - Creative writing
  - Music performing
  - Crafts and design
- Foreign languages
- Intermediate and advanced science
  - Science and mathematics
  - Science competitions
  - Naturalist field trips
- Intermediate and advanced humanities and social sciences
  - Advanced social science, sociology, economics
  - Advanced humanities, advanced literature
- Competitive sports
  - Interschool sports
  - Intramural extracurricular sports (activity included in another category)
- Student government (activity included in another category)
  - Formalized institutional structures to allow students to participate and lead in student self-government as contrasted to social, recreational, and academic-interest club activities

Supports for individual choice

Objective: To provide information and aid to the individual and his parents to permit better choice of school program and of post-high-school opportunity that accords with capabilities

Definition: Activities that provide counseling, testing, and guidance and that enhance and support the capacity of the individual to attain self-realization

- General pupil testing; testing of pupils with special problems; testing of teaching methods
- Guidance for choice among courses, among colleges, and among vocations
- Guidance and counseling of the family
- Psychiatric or clinical psychological guidance and counseling
- "College discovery"

III. Cost-Effectiveness Analyses for Learning

IN THE USE OF LIMITED tax funds, educators, legislators, and elected officials are faced with choosing among programs. Analysis provides information comparing the cost and effectiveness of the several alternative programs. The questions: Why? What? Where? How? For whom? and When? can be clarified and given specificity by careful analysis.

Educational problems that could be illuminated run the gamut from detailed questions to the broad issues of compensatory public education for slum children and for other disadvantaged groups. Analysis may shed light on the question: Where should we locate the new school facility? Or, How should an educational facility be designed to facilitate learning? It would yield more and better information to facilitate choices in scientific instruments or learning devices. At the other extreme, analysis may be directed to such broad policy issues as: What should comprise the school year? How should education be financed?

While analysis of programs is central to the carrying out of a planning, programming, budgeting system, the evaluation and analysis of educational programs may be undertaken with advantage whether or not such analysis is part of an integrated planning, programming, and budgeting system.

The concepts of analysis and evaluation are hardly new to those concerned with education. It is somewhat of a departure, however, that in recent federal legislation the U.S. Congress has specified evaluation as a condition of aid. Congress requires evaluation of educational programs of both the Office of Economic Opportunity and the Department of Health, Education, and Welfare "in order that cognizance may be taken of desirable changes which should be made in future perfecting legislation." This is an active role in policy questioning for the nation's number one legislative body. It is a role that will probably become increasingly important in all federal grant-in-aid legislation. For example, Title I of the Elementary and Secondary Education Act of 1965 requires "provision for approved objective measurements of educational achievement . . . for evaluating at least annually the effectiveness of the program in meeting the special educational needs of educationally deprived children."

Impetus is thus given to legislative requests for evaluation of educational projects and their funding. Such evaluations will yield a body of information of great value for analysis of program options.

What Is Analysis?

Analysis, as defined more specifically in the paragraphs below, is a process of systematically asking relevant questions about full cost implications and benefits of program alternatives to satisfy objectives and assembling information that bears on those questions. The questioning starts by defining program purposes or objectives and by asking what alternative courses may be followed in meeting those objectives. Analysis calls for estimating costs and gains in meeting those purposes by alternative programs. It calls for inquiring about the uncertainty of those estimates. It calls for documentation of the information that is brought together to give greater precision to the "pros and cons" (gains and costs) of alternatives for meeting stated objectives by quantified description where possible and to qualitative statements where quantification is not possible.

The question and objectives—Specifically, analysis addresses itself first to: Are we asking the right question in terms of our objectives or purposes when we ask, for example, What services are available in a community for linotype training? Should we ask instead, Are young persons finding jobs in the fields for which they are trained? Or are we addressing the right question when we ask, How can we achieve a standard of 25 pupils per teacher? Instead in terms of our purposes we might ask, How best can we achieve the learning products we seek in our school system?

By systematically attempting to identify the underlying purposes of education and the schools, a framework is set for the development and the documentation of relevant information that can aid in sharpening the issues for decision and in identifying the component considerations, including cost implications and likely consequences in satisfying the purposes sought.

Alternatives—Analysis calls for a search for alternative ways of meeting the defined objectives, a questioning: What are the options? What can be done in place of what we are now doing? A questioning process on options systematically carried out yields a range of possibilities for examination as to costs and gains.

Through the search for alternatives there is developed a built-in framework for social invention. A frequent criticism of government is that it is slow to accept new ideas. The educational community, among other groups carrying responsibility for public services, has frequently been charged with a lack of receptivity to new ideas. Adoption of analytical methods that routinely call for imaginative creation of new programs and program options should help to overcome this lethargy.

The product of analysis, with its emphasis on alternatives, would confront policy officials with a different kind of decision. In place of the familiar Yes or No response to specific proposals, a range of choices would be provided, both in terms of activities and in ways of carrying them out to achieve defined objectives. Thus, analysis may mean a more difficult decision, since it does not present merely a Yes or No choice.

Documentation—Analysis means documentation, that is, a written statement on what is used as data, what is assumed, what logical sequence is followed in the reasoning. The sources and meaning of statistics that are drawn upon would be set forth. Major assumptions that are made to simplify the study would be set forth in detail. The logical sequence that is followed in arriving at the formulation of the content of the study would be displayed. Limitations, uncertainties, and factors not considered would be clearly identified.

Such documentation permits others to review and understand what has been done. For those public officials who are especially concerned with any policy question or public issue, the documents prepared provide a basis for careful examination of the detailed materials that underlie summary statements of choices for action.

Costs and gains—Analysis calls for two basic sets of information once objectives have been specified and the questions have been defined: (a) information on costs of programs that represent alternative ways of meeting objectives, and (b) information on outputs or effectiveness relative to the objectives of various program or activity options.

The information that needs to be brought together on costs and effectiveness occurs on three levels:

1. Cost and effectiveness in a given current period for each level of the program
2. Future cost and effectiveness implications of present programs and alternatives for each level of the program
3. Changes in cost and effectiveness that accompany changes in level of volume or quality of services provided, both current and future periods.

Program Costs in Alternatives

Costing of public services and projecting costs for a future period are the more familiar components of the information that is brought together as part of an analysis.

For costing purposes we need to know the total estimated cost of each program alternative that is being considered, both initial cost and expenditures that are implicit for the future at the levels of services being examined. For example, the current level of provision of kindergarten services would have to be priced out for the changing number of 5-year-olds and kindergarten services for a half-day session and a full-day session, both for the present number of 5-year-olds and the changing number expected.

Total costs include expenditures for personnel, such as salaries and wages and fringe benefits. They include directly identified costs associated with an activity and that part of overhead that appropriately may be assigned to it. Building costs, equipment costs, and supplies that would be involved in the various program alternatives would be estimated whether borne by the schools or by some other agency. Costs borne by general revenues of the jurisdiction would be identified as well as costs borne by grants and by other taxing jurisdictions.

We also need to know, however, which costs involved in the activity being considered are fixed and accordingly would not change because of changes in level of activity and which costs are variable (i.e., costs that respond to alternations in quantity or quality of service). Such a separation provides the base for estimation of how costs would be modified, or what the marginal cost effect would be, by greater or lesser production of the services.

The work that has been done over the years in developing the manual for educational accounts and the use of such accounts by the U.S. Office of Education for statistical reporting provide an important take-off point for most analyses. However, expenditure accounts specified in the manual do not necessarily yield the total cost data needed for examining in depth the cost of particular optional activities. Nor is it necessary that accounting records and definitions be revised. It would be sufficient to prorate expenditures as recorded for accounting purposes to derive cost estimates. These prorations can be made in accord with reasonable allocation indexes designed to allocate expenditures among purposes. While this procedure would lack the precision of detailed accounts, it would provide adequate information for program analyses. Margins of error are tolerable. The major consideration is whether in arraying alternative methods of getting a task done the figures are comparable from program option to program option.

Measuring Effectiveness

Measurement of gains, benefits, or effectiveness that would be achieved by each of the alternate ways of satisfying the specified objective are far less familiar. Much of the discussion that follows is accordingly addressed to: How does one measure the effectiveness of an educational activity?

In private industry, product output is a relatively simple thing to determine. The output of a car manufacturer consists of the number of motor vehicles of various types produced—trucks, buses, passenger automobiles. For public goods and services, including education, indicators of progress or units of output have not received much attention heretofore. Recent efforts at evaluation of public programs and services give a new significance to output measurement.

Professor Jesse Burkhead, in his studies on educational expenditures, has illustrated in summary form the production process of education in a

6. Input, Process, and Output Variables in the Educational Process

INPUT VARIABLES	PROCESS VARIABLES	OUTPUT VARIABLES
(Land, labor, capital)	(Current expenditure policies)	(Benefits to the individual and society)
Student time in the classroom at home extracurricular	Class size Size of the school	Increased intellectual curiosity Social adaptation
Personnel time administrative teaching clerical maintenance auxiliary	Teacher-pupil ratio Ratio of administrative and clerical personnel to students	Development of creativity
Materials and supplies	Use of personnel for guidance for remedial instruction	Increase in skills and earning ability Increased lifetime earnings
Buildings and equipment		Growth of informed electorate
		Increased national growth

Source: Burkhead, Jesse. "A New Way To View the Educational Process." *Education in the States.* Washington, D.C.: National Committee for Support of the Public Schools, 1966. p. 29.

manner somewhat analogous to that of industry. He shows the interplay of inputs and outputs as shown in Chart 6. This illustration, as Professor Burkhead emphasizes, does not identify the whole range of possible variables in inputs, in process, and in outputs.

The measures we seek are those that can quantify how well we are meeting specified objectives. This quantification, in turn, requires new concepts of measurement. Though the aims of education may be hard to quantify, so are other of our basic aims. In our democratic society we hold freedom dear, yet measurements of freedom have by and large not been developed. We have established institutions, our court system, for example, to assure our basic democratic rights, but we do not have measures of how effectively the courts and the governmental system as a whole are protecting those rights. The illustration of freedom is cited to suggest that the problems of defining measures of effectiveness for education, while difficult, are not unique.

What determines the yardstick that is used to assess whether satisfactory progress toward the achievement of objectives is being made? Several characteristics of such yardsticks need emphasis. The first of these clearly is the relevance of the measure to both the objective and the activity. The second is the completeness of the measurement, that is, the indicators of progress in combination should quantify all significant effects of an activity. A further characteristic is to promote simplicity as long as the indexes encompass the major program accomplishments. However, as we might expect, the availability of information and the potential for collecting new data will affect the indicators used.

Objectives and criteria of evaluation—Clearly the measures selected are determined by the objective of the activity or program. Assume, for example, that as the sole but still vaguely defined objective of the school system, "equality of economic opportunity" had been selected. This vaguely stated objective may be given greater specificity in a number of ways. For illustrative purposes, again to indicate the relation between the selection of product measures and objective, we might reformulate the objective of equality of economic opportunity in operational terms as achieving completion of a 12th grade level of education for all young persons. (At this level, the research of Professor Richard S. Eckhaus of MIT suggests individuals qualify for all but 10 percent of the jobs in the economy.[2]) The most direct measure of output would then become the number and proportion of persons satisfactorily achieving the defined high-school program. The definition of the program would be set in terms of basic requirements for all but 10 percent of job opportunities. An educational program would be more effective the closer it came to achieving high-school completion for 100 percent of each school generation. With this limited statement of the objective, other educational activities, such as the objective of college preparatory work, would not be considered, nor would any other educational product that is not job related.

Multiple purposes and multiple measures—Education as suggested by the outputs listed in Chart 1 serves multiple objectives and thereby calls for multiple indicators of progress toward meeting those objectives. The chart displays benefits to the individual and to society. It includes variables that measure current effects, and those that measure long-range consequences. The selection of variables from among the multiple possibilities again depends upon the objectives that are given emphasis by the public officials in a community or state.

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[2] Eckhaus, Richard S. "Economic Criteria for Education and Training." *Review of Economics and Statistics*, May 1964.

Multiple indicators for single purposes—Even within a single defined objective, adequate measurement of effectiveness may require the development and use of multiple indicators.

Elsewhere we identified for illustrative purposes "the achievement of learning" as a central objective of education. This learning product, in turn, was classified into (a) learning of basic skills, (b) learning of moral and social skills, and (c) learning skills for individual fulfillment. For these subcategories and their component elements, a number of indicators of output are shown in Chart 7. The chart follows an illustrative program structure. The indicators shown also are illustrative, but generally feasible in the present state of the art of testing. While not all school districts or educational departments have readily at hand the information that is called for by those indicators, the data could be collected.

The newness of undertaking to analyze programs in terms of their product and effectiveness will necessarily require collection of new data. It will also require for some programs the development of new concepts for data collection. For example, the illustrative indicators shown include achievement and attitudinal measures that are feasible with present testing instruments, but are not used in many places. To improve the illustrative indicators new tests would have to be designed.

In some cases more than one indicator is listed for a single activity in measuring the progress toward satisfying the objective. In selecting indicators it is possible to use so many that the decision-making process will be overloaded. At the other extreme, important products (negative as well as beneficial) can be overlooked.

Matching "effectiveness" and activity—Measures or indicators of effectiveness necessarily must be selected so that they are appropriate for the activity or program that is being analyzed. At the same time, however, the measuring rods should provide information on the relation of the activity to the broader purpose served. Just as the categories of a program structure display elements and subgrouping of programs that are product oriented, so the measurements of the output will be more or less detailed as indicated in Chart 7.

We have grouped counseling activities, for example, on this chart as one of several types of counseling that have the purpose of giving support to the individual in choosing school programs and post-high-school opportunities appropriate to developing his own capabilities fully. How may we measure the product of family counseling in facilitating the full development of an individual's capability? The number of children and their parents given counseling services is one possible indicator of the volume of activity. Another might be the closely related measure of the number of children referred to and "followed through" family counseling services. Clearly volume of services is an inferior indicator to such measures as school achievement, or work satisfaction and so forth. But counseling often involves a long period before its results can be assessed even when a direct relationship can be established between achievement and family counseling. To come closer to measuring the product, it may be possible to gather information on diagnosis and prognosis by time intervals of cases referred for family counseling services and to separate out and measure differences in individual adjustments and use of capacity between "before" and "after" services, in cases that are amenable to substantial improvement in a relatively short period. It may also be possible to conduct a controlled experiment to obtain information on the differences between "services" and "no services" in a short period. On examination it may be found that a short-term indicator would tend to bias the evaluation for a number of reasons, both in terms of cost and in terms of effectiveness of program, so that other measures of effectiveness would have to be developed. The purpose of this example is merely to illustrate the process of indicator selection.

Effectiveness for target groups—Educational services, often provided under state constitutions that guarantee the right of all children to education, require a careful assessment both of "equality of opportunity" and of fulfilling individual promise for groups of children varying in such characteristics as age, sex, family income, location, physical condition, and intellectual ability.

While objectives may be defined in the same way for all children, alternative programs may have different effects in yielding learning of (a) basic skills, (b) moral and social skills, and (c) self-fulfillment skills, depending upon the intellectual and physical condition of the child and his socioeconomic group.

At this time two groups of children of school age are of particular governmental concern: (a) children in core cities and in poor rural communities for whom compensatory educational services are needed in order to achieve the learning objectives sought and (b) gifted children in and out of core cities on whose full intellectual development depends the quality of the population needed to gain the scientific and technological advances that may compensate for our nation's smaller number of people in the world political scene. Thus, the measures used can be directed to assess effectiveness for target groups; for example, test achievement scores might be provided by sex, economic group, and so forth.

Monetary measures of effectiveness—While the additional earnings that accrue to those who complete high school have become a familiar indicator of education's product, our emphasis is on non-monetary outputs. These non-monetary outputs are more in accord with the central objective "learning" used for illustrative purpose in this pamphlet. We decided to emphasize these non-monetary measures for the following additional reasons:

1. The translation of educational benefits into dollars has become too ready an approach to the effectiveness of education.
2. Activities that make up the overall educational program require more specific measures of effectiveness than are provided by the dollar additions to earnings.
3. Education produces current "value" for children and their parents that is not measured by future increments to earnings. (It must be borne in mind that more than one-fourth of a person's life expectancy—now 66.8

(*Continued on page 90*)

7. Illustrative Program Structure and Output Indicators

PROGRAM SUBCATEGORIES AND ACTIVITIES	OBJECTIVES	INDICATORS
EDUCATIONAL DEVELOPMENT		
DEVELOPMENT OF CHILDREN BELOW SCHOOL AGE		
EDUCATION FOR SCHOOL-AGE CHILDREN AND YOUTH	To develop human learning capability	Number of young persons receiving educational services Results of achievement progress testing Results of measures of attitude change
Development of Basic Skills	Sequential development of independent and self-sufficient persons, through educational levels	Percent of persons equipped for independent living Number not dependent on public or private charity Number employed, attending college, etc.
Skills in caring for one's physical self	To prepare the individual for self-sufficiency	
Physical fitness skills	To develop strength and coordination and to provide an outlet for physical energy	Number and percent of children participating in physical education Number and percent of children meeting specified physical standards

Health habit skills	To reduce health impediments to self-sufficiency and learning and to provide knowledge of detriments to health and physical well being	Number and percent of children with standard specified health habits, e.g., tooth brushing Number and percent of children with knowledge about the effects of tobacco, alcohol, and narcotics Number and percent of children receiving sex education and knowledge of family planning
Skills basic to independent living	To develop the general skills that are preconditions for employment	Achievement test scores: overall Number and percent at grade level Number and percent exceeding grade level Reduction in the percent not achieving at grade level
Language skills	To develop capacity for communication and intellectual advance	Achievement test scores: reading, spelling, and expression Number and percent at grade level Number and percent exceeding grade level Reduction in the percent not achieving at grade level
Computational skills	To develop capacity to deal with numbers and symbols in daily and work life	Achievement test scores: Number and percent at grade level Number and percent exceeding grade level Reduction in the percent not achieving at grade level

Reasoning skills	To develop capacity for solving practical problems, for interpreting instructions, and for stimulating reasoning	Achievement test scores: Number and percent at grade level Number and percent exceeding grade level Reduction in the percent not achieving at grade level
Skills basic to specific employment	To prepare the individual for specific employment	Skills achievement tests: Number and percent of graduates having skill level Number and percent exceeding skill level Reduction in the percent not achieving at skill level
Vocational skills development	To prepare the individual for specific employment	Number of dropouts Number of graduates Percent in jobs after a certain period of time Percent enrolled in colleges and universities
Work experience development	To prepare the individual for specific employment	Number of dropouts Number of graduates Percent in jobs after a certain period of time Percent enrolled in colleges and universities
Social and Moral Skills	To transmit society's fundamental values in order to facilitate group living	Crime rates Juvenile delinquency rates Divorce rates Births to unwed mothers Indicators of tolerance of minority

		groups, religious and race differences Voluntary compliance with specific public programs
Family living skills	To transmit concepts of family living	Sociometric indicators Percent participating in specific homemaker programs
Group participation skills	To transmit moral precepts and concepts of group participation	Percent participating in youth activity groups Percent holding prevailing moral beliefs Percent acting in accord with prevailing social and moral precepts Changes in age-specific crime rates Number and percent participating in extracurricular school activities Number and percent participating in organized recreational and sports activities Number and percent participating in community outdoor and other recreational activities
Societal participation skills	To develop a knowledge and appreciation of the societal environment and how to participate in it	Achievement test scores in social sciences Number and percent at grade level Number and percent exceeding grade level Reduction in the percent not achieving at grade level

		Percent of student body voting in school elections Reduction in the number of offenders and of recidivists Change in delinquency rates
Individual Fulfillment Skills	To achieve awareness of the range of human endeavor and gain full self-realization	Attitudes toward "self" and tests of information
Knowledge of society's achievements	To achieve an awareness of the range of human endeavor and its development	Measured knowledge of a variety of disciplines
Study of history	To achieve an awareness of political, cultural, and social development	Measured knowledge of history
Study of geography	To achieve an awareness of political, cultural, and social development	Measured knowledge of social geography
Arts and music appreciation	To achieve an awareness and understanding of arts and music	Measured knowledge of arts and music
Intellectual expression and training	To draw out and broaden individual capacity and talents	Number and percent participating in intellectual activities
Arts and music (including performing arts)	To ferret out and develop talent in the arts	Number and percent participating in art activities Measured achievements relative to aptitudes Number of prizes and awards
Foreign languages	To ferret out and develop ability in foreign language	Number and percent participating in foreign language Measured achievements relative to aptitudes Number of prizes and awards

Intermediate and advanced science and mathematics	To ferret out and develop ability in science	Number and percent participating in intermediate and advanced sciences Number and percent participating in advanced mathematics Measured achievements relative to aptitudes Number of prizes and awards
Intermediate and advanced humanities and social sciences	To ferret out and develop ability in other special programs To make programs selectively available in terms of child's interest and capability	Number and percent participating in intermediate and advanced humanities and social science Measured achievements relative to aptitudes Number of prizes and awards
Competitive sports	To ferret out and develop athletic ability	Number and percent participating Measured achievements relative to aptitudes Number of prizes and awards
(Student government)	(To develop leadership talents)	Number and percent participating Measured achievements relative to aptitudes Number of prizes and awards
Supports for individual choice (family, educational, vocational)	To provide information and aid to the individual and his parents to permit better choice of school program and of post-high-school opportunity that accords with capabilities	Percent of students using services Percent of families aided Change in separations and divorces Change in school performance of child Percent of graduates admitted to college Percent of graduates continuing for a complete college program

years for males at birth—is the period of childhood.)

4. Population mobility frequently creates benefits or returns from a full period of preparatory education in places other than the communities in which educational services were received by an individual.

5. Educational programs serve multiple purposes, and these purposes, especially as they concern different target groups, would not be displayed fully if combined in a single dollar measure.

In summary, the measure of added earnings does not sufficiently reflect the full benefits of learning.

Almost all the non-monetary indicators could be translated in one way or another by assigning what is termed "shadow prices" or some monetary value. For example, an estimate might be developed of what parents would be willing to spend to have Johnny move from grade 4 to grade 5.

There are, however, types of measures of effectiveness appropriate to the objective selected that can readily and appropriately be put forth in dollar terms. We have already indicated the increments to earnings criterion which is applied frequently. There are other monetary measures such as the reduction in cost of noneducational public services as a consequence of "learning." These may include savings in expenditures for welfare, juvenile delinquency, health, and so forth.

Relating Costs and Effectiveness

Analysis of programs concerns itself with relating the cost of various optional means of achieving an objective to the gains or output which are indicated by the values estimated for the measure of effectiveness. Dollar changes in cost for each alternative program mix and level, when arrayed against the changes in effectiveness, provide the skeletal format for analyzing programs or activities. In an appended statement we present a hypothetical example of an analysis to show, at least in a partial way, the process and the kinds of information that would become available.

Qualification and Summary

Analysis of educational programs is clearly difficult because of the special characteristics of the services produced. Among these characteristics which make analysis difficult are:

1. The long gestation period of education outputs and the length of the necessarily sequential learning processes.

2. Our limited knowledge of the learning process which might hamper attempts to attribute a particular result to the actual activity which produced it.

3. The multiplicity of objectives in education which complicates the task of assigning a particular activity to the final educational purpose which it serves.

4. The difficulty of factoring out the effects of nonschool experiences on the process and product of learning.

Allocation of tax funds for education requires information on the relative effectiveness of alternative types of programs. They require costing of the various options. While frequently costs may be specified within a reasonable margin, prediction of effectiveness is often much more complex. Part of the difference lies in the familiarity of cost estimation, and the unfamiliarity of effectiveness quantification. As more work is done on program analysis and additional resources are devoted to program evaluation and effectiveness measurement, the tasks of program analysis will become easier.

Even now efforts are being made to assemble the findings of earlier experimental studies that could provide a "data base" for prediction of the effectiveness of various educational programs and activities. New experimental studies with adequate controls are being undertaken. A substantial enlargement of the research and program evaluation effort is indicated. Program analysis, however, and generation of alternatives will likely remain a creative art rather than a science—a creative formulation of the "problem" and a creative development of means of attacking it.

Appendix: An Illustrative Example of the Process of Cost-Effectiveness Analysis

A BRIEF EXAMPLE is presented here to help clarify, at least in a summary way, the difference analysis would make in informational materials presented to those faced with decisions on public questions.[*]

For this example we selected child care (or supervisory) activities now peripheral to school operation in most communities. For simplicity's sake only, we do not consider any learning effects of these child care services. Our defined objectives of child care as an illustration, are (a) to give mothers more choice in satisfactory employment, and (b) to enhance family income.

In outlining the processes we (a) generate a series of optional programs, (b) formulate measures of progress toward satisfying the defined objective, (c) quantify the progress in terms of the measures of effectiveness, (d) assess the additional costs implied by the optional programs.

Program options—We consider several changes in school operations that

TABLE 1.—CHARACTERISTICS OF CHILD-CARE PROGRAM OPTIONS

Program characteristics	Program options				
	I	II	III	IV	V
1. Hours of service	9 A.M.- 3 P.M.	8 A.M.- 6 P.M.	8 A.M.- 6 P.M.	8 A.M.- 6 P.M.	8 A.M.- 6 P.M.
2. Weeks of service	40	40	52	40	52
3. Home health services	None	None	None	Range	Range

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[*] The assistance of Brian Herman, Research Scientist, in developing this example is gratefully acknowledged.

would broaden the choice of employment outside the home with its added money income for mothers. These include:

1. Lengthening the hours of school activities for children five years of age and over on an elective basis
2. In addition to lengthening the hours per day, extending the number of weeks of school activities from an assumed 40 weeks to 52 on an elective basis
3. During an extended day providing a range of home health services (practical nurse, home making, etc.) to care for the child who is temporarily ill, either for 40 weeks or 52 weeks.

Again for ease of presentation we do not consider programs other than child care that would facilitate a broadened choice of satisfactory employment for mothers, nor do we consider reducing below five years the age of children for whom child care activities might be provided.

We display in Table 1 the hypothetical characteristics of an assumed on-going program, and then vary the hours, weeks, and provision of home health services in several combinations to provide more supervised activities for the child of school age.

Program I is the assumed on-going program.

Program II is lengthening of the hours of school activities from 9 A.M.-3 P.M. to 8 A.M.-6 P.M. on an elective basis.

Program III is lengthening hours from 9 A.M.-3 P.M. to 8 A.M.-6 P.M. and in addition extending the weeks of school activities to 52 weeks, on an elective basis.

Program IV is a provision of school activities from 8 A.M.-6 P.M. and also health services, for the 40 weeks of the on-going school year.

TABLE 2.—ILLUSTRATIVE EMPLOYMENT EFFECT OF CHILD-CARE PROGRAM OPTIONS (NUMBER OF MOTHERS)

	Program options				
Mothers' employment status	I On-going program	II Added hours	III Added hours and weeks	IV Home health and added hours	V Home health and added hours and weeks
Remain at home	600	500	450	450	410
Are employed within hours 9 A.M.-6 P.M. only	100	50	40	70	60
Are employed within hours 8 A.M.-6 P.M. but not exclusively during 9 A.M.-3 P.M.	240	400	460	430	480
Are employed hours other than 8 A.M.-6 P.M.	60	50	50	50	50
Total	1,000	1,000	1,000	1,000	1,000
With improved choice	800	800	800	800	800
Without improved choice[a]	200	200	200	200	200

[a] Mothers with children below existing school age, or those not able to work outside the home.

TABLE 3.—ILLUSTRATIVE ADDED INCOME EFFECTS OF CHILD-CARE PROGRAM OPTIONS

	Program options				
Groups of mothers	I On-going program	II Added hours	III Added hours and weeks	IV Home health and added hours	V Home health and added hours and weeks
Newly employed mothers...	0	100 @ \$2,000 = \$200,000	150 @ \$3,000 = \$450,000	150 @ \$2,600 = \$390,000	190 @ \$3,600 = \$684,000
Mothers changing jobs	0	80 @ \$1,000 = \$ 80,000	100 @ \$1,400 = \$140,000	100 @ \$1,200 = \$120,000	120 @ \$1,600 = \$192,000
		Reduced private child-care costs			
Working mothers saved existing child care costs.......	0	50 @ \$ 400 = \$ 20,000	50 @ \$ 500 = \$ 25,000	50 @ \$ 400 = \$ 20,000	50 @ \$ 500 = \$ 25,000
Total	0	\$300,000	\$615,000	\$530,000	\$901,000

NOTE: In each case the estimated number of women affected is multiplied by the estimated increase in earnings or by saving in estimated existing child-care costs.

TABLE 4.—ILLUSTRATIVE NUMBER OF PUPILS BELONGING TO MOTHERS IN EACH EMPLOYMENT CATEGORY (A COST WORK SHEET)

	Program options				
	I	II	III	IV	V
Mothers' employment status	On-going program	Added hours	Added hours and weeks	Home health and added hours	Home health and added hours and weeks
Remain at home	900	750	675	675	615
Employed between 9 A.M.-3 P.M. only	150	75	60	105	90
Employed within hours 8 A.M.-6 P.M. but not exclusively during 9 A.M.-3 P.M...	360	600	690	645	720
Employed hours other than 8 A.M.-6 P.M.	90	75	75	75	75
Total	1,500	1,500	1,500	1,500	1,500

Program V is a provision of school activities from 8 A.M.-6 P.M. and also home health services for 52 weeks.

Effectiveness

To compare these programs, we ask: How many mothers would have an improved choice of more satisfactory employment? Some mothers clearly have children below school age as well as children of school age and accordingly could not benefit from the program options as they are set forth. Some others are not able to work outside the home for other reasons. We then ask: How many mothers from among those with an improved choice would actually choose to work outside the home? What would be added to family income?

Information would have to be gathered in our hypothetical community to determine how many mothers would be affected and their potential earnings. Table 2 displays the information obtained on mothers' employment status under each program.

A total of 1,000 mothers is assumed for the children five years of age and over that are supervised by the school. Under the on-going program 600 of the mothers are assumed to remain at home and 400 to work outside the home. For each of the program options illustrative figures are displayed for the employment status of the 1,000 mothers. (We assume for the immediate period no net movement in or out of the community.)

Table 3 presents illustrative figures on added earnings that would be made possible by adoption of one or the other of the several program options. These illustrative figures reflect the assumed increases owing to (a) more mothers working and (b) more mothers who are enabled to take on full-time or more responsible jobs. It also includes saving in child care expenses which are being incurred by those mothers who work under the on-going school program. (Data would have to be developed that permit an estimate of such expenses.)

Costs of Programs

For each program option, cost figures that include the full cost implications of the additional child care services would be estimated. Various methods of cost calculation may be applied. For the hypothetical community with its distribution of mothers and pupils we have developed cost estimates based on on-going school costs by pupil. For the program options that include home health services as well as extended school supervisory activities cost calculations are based on total costs per home health service worker.

For example, there are assumed to be 1,500 pupils who are potential users of each program. The use pupils make of a program is likely to be determined by the employment status of the mothers.

Table 4 shows an illustrative distribution of pupils by the employment status of their mothers. (It has been assumed that there are 1½ pupils for every mother.)

How many of those potential users of the program offerings would use them? Table 5 shows the illustrative percentage of pupils in each category who are expected to make use of the program. (Data for this type of display could be collected by means of a survey or estimated by reference to the experience of other communities with similar types of programs.)

A "market-type" study on demand for home health service combined with school absenteeism data or health statistics would provide the information needed to make a calculation of requirements. For the table presented here we have filled in hypothetical numbers by assumption. For example, we have assumed that mothers working full time would make most use of day care programs, mothers working part of the day would choose to make less use of the facilities, and mothers remaining at home during the time the facilities were offered would make some but not much use of them.

In the illustrative figures an assumed peak load demand for home health services was taken into account because of the seasonal pattern of illness. For example, it was assumed

TABLE 5.—PERCENT OF PUPILS OPTING FOR EACH PROGRAM

Mothers' employment status	Program options									
	I	II	III		IV		V			
			Day care				Day care		Homemaking	
	On-going program	Day care 40 weeks	40 weeks	12 weeks	Day care 40 weeks	Homemaking 40 weeks	40 weeks	12 weeks	40 weeks	12 weeks
Remain at home	100%	10%	10%	20%	10%	1%	10%	20%	1%	1%
Employed between 9 A.M. and 3 P.M. only	100	20	20	60	20	5	20	60	5	5
Employed within hours 8 A.M.-6 P.M. but not exclusively during 9 A.M.-3 P.M.	100	60	60	70	60	5	60	70	5	5
Employed hours other than 8 A.M.-6 P.M.	100	10	10	20	10	1	10	20	1	1

TABLE 6.—ILLUSTRATIVE NUMBER OF PUPILS OPTING FOR EACH PROGRAM—A COST WORK SHEET

	Program options									
	I	II	III		IV		V			
		Added hours day care	Added hours and weeks		Home health and added hours		Home health and added hours and weeks			
			Day care		Day care	Home health	Day care		Home health	
Mothers' employment status	On-going program	40 weeks	40 weeks	12 weeks	40 weeks	40 weeks	40 weeks	12 weeks	40 weeks	12 weeks
Remain at home		75	68	136	68	7	62	124	6	6
Employed between 9 A.M. and 3 P.M. only......		15	12	36	21	5	18	54	5	5
Employed between 8 A.M. and 6 P.M. but not exclusively 9 A.M. and 3 P.M.		360	414	483	487	32	432	504	36	36
Employed hours other than 8 A.M. and 6 P.M.		8	8	16	8	1	8	16	1	1
Total		458	502	671	484	45	520	698	48	48

that a maximum of 5 percent of pupils would stay in at home at any one time. After taking account of illness of siblings, it further was assumed that perhaps something over 3 percent of the homes would potentially need home health care at any one time.

It also was assumed that almost all of the working mothers would make use of home health services when needed, and that 20 percent of nonworking mothers would make use of these services.

Based on the illustrative percentage of pupils in each category of "employment status of mothers" the number of pupils who would use the alternative program offering may be estimated. The hypothetical figures are shown in Table 6.

After establishing the numbers of users of the program offering, the full added cost per user must be determined. Facility costs that are "fixed" and that would not be affected by the additional services would not be counted—school facility costs, for example. New equipment needs, however, would be included as would additional expenditures for staffing, fringe benefits, school meals, and so forth.

In setting down the estimates of dollar cost for the program option in our hypothetical case in Table 7 it was assumed that the additional cost for each program was as follows:

The 40-week program of 8-6 care was $700 per pupil.

The 12-week program of 8-6 supervision during the school recess period was $420 per pupil.

The home health costs for 40 weeks was $2,800 per worker.

The home health costs for 12 weeks was $800 per worker.

It was assumed that one home health worker would be required per household needing home health care.

An analysis would require an assessment of the availability of personnel and other resources to carry out each of the program options as well as of program benefits.

Summary of Effectiveness and Costs

We have defined several measures on the basis of which to judge the progress made by alternative programs toward satisfying the two defined objectives, namely:

1. To give mothers more choice in satisfactory employment
2. To enhance family income.

Two of the measures are dollar criteria and three are psycho-social criteria. The progress that would be made under each option is shown in Tables 2 and 3 and is displayed along with estimated costs in Table 8.

Clearly the types of data shown in Table 8 are more informative than the usual staff materials developed for policy officials. Moreover, qualifications on such informational materials help to put in perspective the analysis carried out.

In limiting the analysis, for example, to the employment of mothers as the defined objective, we have left out a host of important benefits that relate to other purposes. Included among those omitted are:

1. Benefits in learning, by children
2. Benefits to family and community from extra supervision of children
3. Reduction in community costs attributable to saving in public welfare, in juvenile delinquency, and untreated illness
4. Advances from poverty
5. Secondary expansion brought to the communities' economy through the mothers' expenditure of their extra income.

We also limited the analysis to a range of five options. On completion of the initial analysis, a decision may be reached as follows. The cut-off point of alternatives was too soon. Additional options need to be consid-

TABLE 7.—ILLUSTRATIVE ESTIMATES OF PROGRAM COSTS

	Program options				
	I	II	III	IV	V
Additional costs	On-going program	Added hours	Added hours and weeks	Home health and added hours	Home health and added hours and weeks
DAY CARE					
Additional costs per pupil					
$700 for 40 weeks	...	$321,000	$351,000	$339,000	$364,000
$420 for 12 weeks	...	...	282,000	...	293,000
HOME HEALTH					
(Costs per home health worker)					
$2,800 for 40 weeks	...	...	...	120,000	128,000
$800 for 12 weeks	...	...	...	...	38,000
Total	0	$321,000	$633,000	$459,000	$823,000

TABLE 8.—ILLUSTRATIVE SUMMARY INFORMATION PROVIDED TO DECISION MAKER

	Program options				
	I	II	III	IV	V
Evaluation criteria	On-going program	Added hours	Added hours and weeks	Home health and added hours	Home health and added hours and weeks
	Effectiveness to satisfy employment and income objectives[a]				
1. Mothers with improved choice	0	800	800	800	800
2. Mothers previously working obtaining more satisfactory employment	0	80	100	100	120
3. Mothers newly employed	0	100	150	150	190
4. Added family income and saving in child care costs	0	$300,000	$615,000	$530,000	$901,000
	Added costs				
5. Dollars of additional total costs in year[a]	0	$321	$633	$459	$823
	Other purposes served				
Improved learning of children					
Reduced social problems resulting from child neglect					
Reduced public dependency and poverty					
Higher community income (both present and in future)					

[a] From Tables 2, 3, and 7.

ered, for example, reduced age at which child care is provided, or home health services without other day-care facilities.

Ideally, analyses or programs of this nature should not be carried out exclusively for different levels of effort in only one year, but on a multi-year basis. Costs of the program may be highest in the first year while the program is being set up, whereas benefits may be lower in the first year. For example, not all mothers who *seek* employment may find it immediately. Furthermore, as the mothers work a longer period and gain experience, their average income may rise.

The purpose of this sample cost/benefit case has been to display some of the informational materials that would result from analysis. A full-scale analysis would involve many extra steps, but the same type of analytical approach would be applied and similar categories of critical information would be used.

Financial Problems of Parochial Schools

C. Albert Koob

In the early years of our Republic, Roman Catholics constituted a tiny minority of the total population. During the 19th century, however, this situation changed dramatically as successive waves of immigrants arrived from western and middle European countries. Normally, the children of these immigrants enrolled in the local public schools. In these schools, however, they were regarded with considerable suspicion because of their foreignness and particularly because of their religion.

The latter half of the 19th century, in terms of ethnic and religious tolerance, was one of the less admirable periods in American society and Roman Catholics, as the most recently arrived and least assimilated, suffered from this prejudice in every civil institution of mid-19th century America. At first, leaders of the American Catholic Church attempted to reach an understanding which would prevent their children from suffering disadvantage in the public schools and allow them to receive Catholic religious instruction as well. All attempts at accommodation failed, and finally, in the last quarter of the 19th century at the Council of Baltimore, leaders of the American Catholic Church decided to attempt to construct their own religious school system. The announced goal of the bishops, "Every Catholic child in a Catholic school," proved impossible of fulfillment. Still, fairly steady and substantial growth occurred between the time of the Baltimore Council and World War II.

During the 1950's, however, the percentage of school-age population in parochial schools increased rapidly. By the mid-1950's approximately 45 percent of Catholic high-school-age students were in Catholic high schools and about 60 percent of Catholic elementary-school children were in Catholic schools.

Today, that figure is notably lower. In less than a decade the proportion of Catholic children in Catholic high schools has declined from 45 percent to approximately 30 percent, this figure representing about 8 percent of the total secondary-school-age population in the United States. At the elementary level, the proportion of Catholic children in Catholic schools today is slightly below 50 percent, a drop of about 10 percentage points in little more than a decade. This 50 percent represents about 14 per-

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cent of the elementary group in our country. So, today, there are approximately four and one-half million pupils in Catholic elementary schools and slightly over one million students in Catholic secondary schools.

Let me give you a few facts which deal with financial problems in Catholic education. Typically, Roman Catholics are a highly urban group, and the largest concentration of Catholic schools is found in the metropolitan areas of the eastern United States and in many large urban areas of the midwest and far west. The per-pupil cost in Catholic schools is rising more rapidly than that in public education. Yet, in relation to comparable public-school figures, it is still very low. In a recent study of 20 New York State urban areas, the per-pupil cost in Catholic elementary and secondary schools was typically less than half that of the local public school district. The obvious financial asset Catholic schools possess which makes this low operating figure possible is one which was taken largely for granted until the last decade—the contributed services of the sisters, brothers, and priests who normally work in Catholic schools for a very low wage. The stipend these people receive is often as little as a thousand dollars a year.

The salaries of lay teachers in Catholic schools has also traditionally been well below public-school scales. This, too, is changing very rapidly. The trend today is for both religious and lay teachers to receive higher salaries, with those of lay teachers rapidly becoming competitive with local public-school schedules. The reason for this increase is not purely a sense of social justice and religious obligation, but rather, that more and more lay teachers are replacing the diminishing number of religious teachers, and the principle of a seller's market is operating. We are then in the difficult situation of hiring more and more teachers to whom we are paying higher and higher salaries. One stimulus to increased salaries, too, is increasing teacher militancy. We share with our public-school colleagues the unhappy distinction of having suffered teacher work stoppages. It is obvious that our lay teachers want, need, and have a right to higher salaries than they typically receive in Catholic schools. However, the need and right do not of themselves confer increased sources of funds upon the Catholic school system.

There is in Catholic formal education a traditional and rather diffused structure for policy making and administration. This begins at the level of the diocese, a geographical area usually embracing several counties and occasionally an entire state. This territory is governed in most of its affairs by a bishop. The diocese is divided in turn into parishes, presided over by pastors. The religious communities, that is, the sisters, brothers, and many of the priests who teach in Catholic schools, sometimes work directly for the parish and the diocese or they may maintain what we call private schools, that is, schools which are owned and controlled directly by the religious community.

Diocesan schools receive their funds normally from student tuition and from funds raised by assessments upon the parishes which send children to that school. The parish schools (parochial schools in the strict sense of the word) usually charge tuition and make up the very substantial deficit from parish funds collected through the Sunday offerings. Religious schools, that is, schools owned and operated by the religious communities, normally depend upon tuition for their entire financial load.

There is not, and never has been, any real national control exercised over Catholic education in this country. The Association which I represent, the National Catholic Educational Association, is comparable to the National Education Association, that is, it is a voluntary association of schools and school personnel.

The administrative structure of Catholic education includes a diocesan superintendent of schools who occupies a position approximately comparable to the school district superintendent in the public sector. Each school, of course, has a principal in charge.

Rather typically in the past, the bishop of the diocese and the pastor of the parish have been the policy makers for Catholic schools. In the last 5 to 10 years this tradition has changed dramatically with the introduction of lay school boards at the diocesan and parish levels. Among many encouraging effects of this innovation in the control structure, there has been a notable improvement in financial accounting procedures and revenue. Concurrent with changes in the policy-making structure have been better attempts at centralizing and thus equalizing income and expenditures in Catholic schools. Several dioceses have instituted supplementary education funds to assist those parish schools which cannot raise revenue adequate to the school's needs through the normal sources of tuition and parish income. This essentially is an application of the metropolitan concept in which more affluent school areas assist innercity schools which may have higher per-pupil cost requirements.

In a study which he is now concluding in a large western archdiocese, an economist from the University of Notre Dame, Dr. Ernest Bartell, concludes that we have not done a completely adequate job of tapping the resources of the Catholic community. He concludes that this inadequacy is derived from several sources, but most obviously these are the failure to communicate adequate and meaningful financial data to the Catholic community, and an excessive parochialism which tends to leave each parish satisfied with its contributions when its school has reached a desired level of excellence.

A midwestern state with a heavy Catholic school population is moving to implement a "Total Finance Plan." Such a plan envisions increased donations for Catholic education from three principal sources: first, better fund-raising procedures and greater accountability to the supporting communities; second, state and federal support; and finally, substantial assistance from business and industry in that state. Several other dioceses are expected to mount similar campaigns, emphasizing especially to business and industry management, tax savings effected through the continuance of the non-public schools.

Second only to the critical need for increasing revenues is the need for better planning of expenditures in Catholic school systems. A beginning was made on this years ago through the publishing of a common accounting manual for Catholic schools. This manual is now being revised in accordance with recent public school and U. S. Office of Education changes. This manual or a comparable local adaptation has been widely accepted in Catholic dioceses as a basic tool in financial planning.

Last December, the University of Notre Dame sponsored a five-day seminar for diocesan school superintendents in program planning and budgeting. The PPB approach seems feasible for Catholic dioceses, especially as they are now being forced to reassess their long-range goals and philosophy of education.

Just a month ago, the National Catholic Educational Association received a grant from the Ford Foundation for financial planning seminars. These seminars are to be staged initially in five of our largest cities. They will assist superintendents, heads of religious communities, principals, and pastors in planning the total educational program for periods of one to 10 years. If the original funded plan to train 300 educational administrators proves successful, these seminars will be extended to other dioceses throughout the country. They may offer the first systematic attempt on the part of Catholic school educators to match their philosophy and goals with resources available in terms of money and personnel.

The final topic in Catholic school education I would like to discuss is summed up in a frequently heard phrase—the public service concept. It seems evident that all good education serves the public good to some extent, but Catholic educators are looking with increased attention to the specialized contribution they can make to our nation's most acute needs. It does appear increasingly appropriate to us that our religion-oriented schools serve the community in those areas in which educational needs are the highest and the tax base for education the lowest. I refer especially to the educational situation in the typical American inner-city school district. It is here that an increasing number of our sisters, brothers, and priests wish to serve, and it is precisely in this area that the nonpublic school may be able to make a dramatic contribution to our society's greatest problem. It is my hope that Catholic schools will remain and increase in the inner cities of our nation; that in accordance with the best of religious tradition, they will be given by their more affluent suburban neighbors the resources they require to run rich schools—schools that truly enrich the lives of their students. We recognize that it is often difficult for public school districts to achieve this commonly recognized need. I hope that the religious school systems in every metropolitan area will take this as a primary goal to supply what is most needed in public schools and to stimulate the public sector to accept more responsibility for children of the ghetto.

In one of our large eastern dioceses, study groups have proposed placing Catholic schools, facilities, and personnel at the disposal of inner-city residents. Catholic school personnel would offer to serve as needed, either in public schools of poverty areas, or in Catholic schools there. At least part of their living expenses would be shared by the entire Catholic community of the archdiocese.

In a recent speech [1] to the Oregon Education Association, the U. S. Commissioner of Education pointed out that most of our educationally deprived youngsters are in the cities, and most cities are being shortchanged in state educational funds. Mr. Howe referred to a recent study of the Civil Rights Commission, which found that in 7 of 12 metropolitan areas examined, the states were paying a higher per-pupil reimbursement to the suburban districts than to the core city. It was to correct this inequity of "higher needs, lower income" that the Detroit Board of Education recently sued the state of Michigan for more state school funds.

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[1] *Equity and States Rights,* an address by Harold Howe II before the State Convention of the Oregon Education Association, Portland, Oregon, March 11, 1968.

We believe there is rather strong logic in the "cost benefit" argument for assistance to all American education. Under this concept, it is surely reasonable to ask those who benefit most from education to pay something for it. Thus, some tuition charges seem justified in any institution, always with the understanding that the good of society, that is, an educated citizenry, requires that students who cannot pay anything receive equal educational opportunities.

We are strongly interested in and sympathetic to efforts mentioned earlier to obtain increased revenues for education from gifts and endowments, especially from business and industry. These institutions prosper because of and in proportion to the quality of education. It does not seem unreasonable to expect the business community to be more generous toward all schools, but especially toward those which perform a public service at considerable tax savings.

In a recent issue of *Forbes* the editor mentioned the real possibility—indeed it is now a fact—that some Catholic schools will be financially unable to continue to operate. To one group studying the advisability of discontinuing Catholic schools, Governor Rockefeller is quoted as saying simply, "For God's sake, don't do it." And Mr. Forbes adds, "To which the rest of us, regardless of faith or faithlessness, can utter a fervent Amen." [2]

The closing of grades and schools in Catholic systems is an unhappy event for any community. In Bennington, Vermont, a beautiful new public high school has become something of an administrator's nightmare, as the facilities planned for 900 are bursting with an additional 350 pupils formerly in the Catholic high school which was closed with no warning.[3]

As grades are closed in Catholic schools, local public schools are strained to and beyond their limits of personnel, space, and equipment to care for all children. Nobody profits from such regrettable events, and children suffer most. I do not say this as a plea, but as a simple statement of fact; unless Catholic schools can notably increase revenues from all possible sources, they will be forced to discontinue in increasing numbers, and all American education will be the poorer for it.

There is no question either, that Catholic schools must do a far better job of financial planning, and of accounting to the communities which support them. Members of these communities, whether Catholic parents, business and industry management, or the public at large, must be given some voice in the formation of policy for these schools. That this poses problems for Catholic administrators, problems for public schools, and problems for the courts, is fairly obvious. Our only choice is whether to accept these probably soluble problems instead of the certain losses and crises which would be precipitated in many areas if Catholic schools are allowed to languish and die.

Our principal concerns in Catholic education must have a familiar ring to most of you. It is not surprising, since so many of our ills have a common remedy, the dollar. But there are four concerns of Catholic education which I want particularly to emphasize:

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[2] *Forbes*, March 1, 1968, p. 20.

[3] Berry, I. William. "Prize-Winning School Attracts SRO Crowd—And Headache." *Education News* 2:12; March 18, 1968.

1. Catholic educators are reconsidering the purpose of Catholic schools in the light of the possible; should we offer *some* Catholic school education to *all* Catholic children, or *all* to *some,* or should Catholic schools primarily offer special services to any children of the community who stand most in need of that assistance.

2. Costs will continue to increase even more sharply in Catholic than in public schools, as the number and per-unit cost of lay teachers increase, and religious communities require much greater income. The imminent breakthrough in educational technology will probably bring much more expense before it begins to effect savings.

3. Current revenue sources for Catholic schools are clearly inadequate, and the basic sources of church collections and tuition are not meeting increased needs.

4. The nature of educational control—the policy-making structure—in Catholic school systems needs to be broadened, with all contributing communities having a voice in policy formation.

Probably to no one's surprise, I will conclude by saying Catholic schools have financial problems, many and severe. If, as John Gardner has suggested, educators today are faced with marvelous opportunities cleverly disguised as insoluble crises, then I for one welcome any assistance you can offer me in penetrating that disguise!

Improving Racial Balance in San Francisco's Schools—Estimating Effectiveness and Costs

William J. Platt

I SHALL DISCUSS THE COST of alternative approaches to achieving racial balance in a large city school district by summarizing relevant aspects of a study Stanford Research Institute undertook for the San Francisco Unified School District. Beginning with the side of the coin labeled effectiveness seems to offer clarity in describing what desegregation programs are being costed and why.

The objectives of the study are (a) alternatives to improve racial balance, (b) effectiveness and cost, (c) reviews with community groups, and (d) transition planning. This paper is not the place to discuss the pros and cons of school desegregation. Suffice to say that presumably the San Francisco Board of Education commissioned the study in the belief that improved racial balance is a necessary precondition for equality and quality of educational opportunity.[1]

We reported our findings in a series of memoranda reports, as follows:

Measuring Racial Balance
Public School Population in 1971
Dimensions of Equality of Educational Opportunity
Educational Organization for Desegregation
Adapting to Changing Racial Composition—A Survey of Teachers and Principals
Transportation Requirements for Improved Racial Balance
Evaluation of Alternative Attendance Patterns
Summary Report—Improving Racial Balance in SFUSD

The following discussion is confined to illustrating the application of cost-effectiveness approaches.

Geographically San Francisco is compact. It measures only seven miles by seven miles. Despite terrain obstacles, it is possible to move from one part of the city to almost any other part within 45 minutes, even at school opening and closing hours.

San Francisco's 91,000 public-school students attend 94 elementary schools, 15 junior high schools, and 8 senior high schools. The ethnic composition of public schools in 1966, according to the District's classification, was 44 percent white, 26 percent Negro, 18 percent Oriental, and 12 percent

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[1] For a further discussion of school desegregation, see *Whatever Happened to School Integration* by William J. Platt, available through the publications office of SRI.

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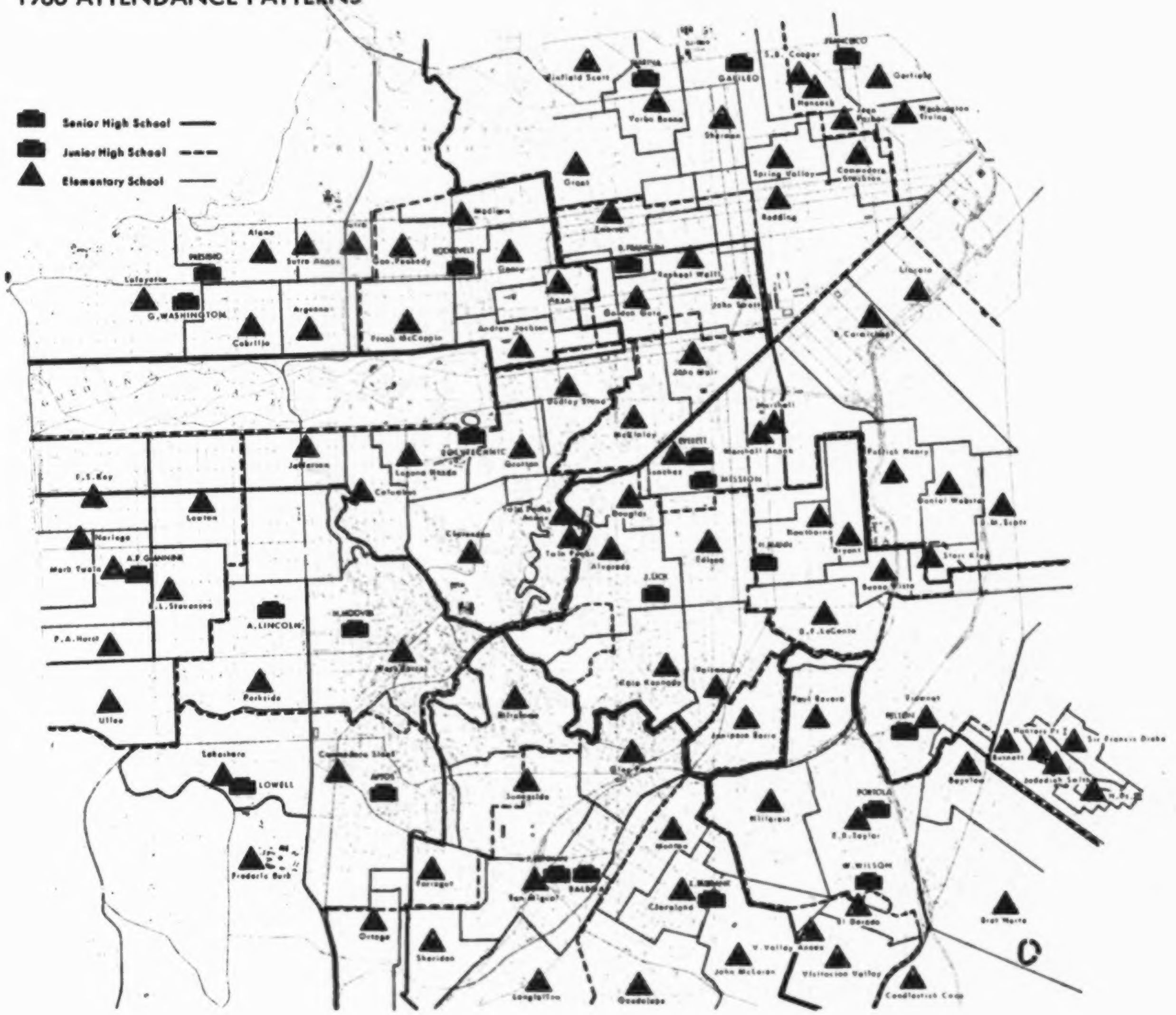
1966 ATTENDANCE PATTERNS


Senior High School
Junior High School
Elementary School
PRESIDIO
GOLDEN GATE PARK
Lafayette
PRESIDIO
G. WASHINGTON
Alamo
Sutro Annex
Cabrillo
Argonne
Geo. Peabody
ROOSEVELT
Frank McCoppin
Madison
Emerson
Andrew Jackson
Winfield Scott
Yerba Buena
Grant
GALILEO
Sherman
S.B. Cooper
FRANCISCO
Hancock
Garfield
Jean Parker
Washington Irving
Spring Valley
Commodore Stockton
Redding
B. FRANKLIN
Raphael Weill
Golden Gate
John Swett
John Muir
Dudley Stone
McKinley
Lincoln
B. Carmichael
Marshall
Marshall Annex
EVERETT
Sanchez
MISSION
Patrick Henry
Daniel Webster
D.W. Starr
Hawthorne
Bryant
Starr King
Buena Vista
POLYTECHNIC
Grattan
Laguna Honda
Jefferson
Columbus
F.S. Key
Lawton
Noriega
A.P. GIANNINI
Mark Twain
R.L. Stevenson
A. LINCOLN
H. HOOVER
P.A. Hearst
Parkside
Ulloa
Twin Peaks Annex
Clarendon
Twin Peaks
Alvarado
Douglas
Edison
J. LICK
Miraloma
Sunshine
Glen Park
Fairmount
Kate Kennedy
Junipero Serra
Paul Revere
B.F. LeConte
Sunnyside
Commodore Sloat
APTOS
Lakeshore
LOWELL
Frederic Burk
Farragut
Ortega
Sheridan
San Miguel
BALBOA
Longfellow
Guadalupe
Monroe
Cleveland
John McLaren
V. Valley Annex
Visitacion Valley
El Dorado
W. WILSON
E.R. Taylor
PORTOLA
Hillcrest
Candlestick Cove
Bret Harte
Fremont
NELSON
Bayview
Burnett
Sir Francis Drake
Jedediah Smith

Spanish surname. Like most school districts, San Francisco has traditionally observed a neighborhood school attendance policy. Thus, since residential patterns are largely segregated, so too are the schools *de facto* segregated.

Measure of Effectiveness

An early task in the project was to define as precisely as possible the objective of improving racial balance and how to measure progress toward the objective. What constitutes racial balance? A variety of definitions of imbalance have been used, including:

- The nonwhite population of a school is sharply out of proportion with the racial composition of the community.
- The nonwhite percentage is more than twice the nonwhite percentage of the area.
- The nonwhite enrollment exceeds 50 percent.
- The nonwhite proportion is at least 15 percent higher than the district average.

We found none of the current definitions fully satisfactory. Most of the definitions were "go, no-go" definitions. These are not sensitive enough to show continuous variation in the degrees of segregation and desegregation of various attendance policies. Accordingly my colleagues, Ben Lekowitz and Tony D'Esopo, developed a new measure. Its use allows one to determine whether one pupil assignment alternative is more effective than another in meeting the objective in improving racial balance.

The key elements in the measure are the quadriracial categorization of enrollment, and the use of the school as the unit of aggregation. The number of ethnic groups could easily be increased beyond four. Similarly, an aggregation unit smaller than the school could be used, either the grade or even the classroom.

The derivation of this measure is as follows: Essentially, the technique measures for each school the magnitude of the deviations of the percent composition of one ethnic group, say white students, from the district-wide average composition of that ethnic group. To take into account varying school sizes, the individual deviations are weighted by school enrollment, thus: school or grade enrollment × absolute value of (individual white student percentage—district-wide white student percentage). (See also page 108.)

For any school, then, we can compute the weighted cross-product. This number can be summed over all schools of the same type (e.g., junior high school) and the total is a measure, m, of racial balance for the particular ethnic group in that system of schools.

What is the range of the measure, m? Under complete desegregation, all schools would have identical white students (or other ethnic group) percentages—the district-wide average. If all schools had the district-wide white percentage, all the deviations would be zero, and, consequently, the measure, m, would also be zero. Under complete *segregation,* white students would go to one set of schools and nonwhite students to the remaining schools. In this arrangement, the white student percentage is 100 percent in the all-white schools and zero percent in the nonwhite schools. Therefore, the maximum value that m may take on is: number of white students × (100—district-wide white student percentage) + number of nonwhite students × district-wide white student percentage. (See also page 108.)

$$\text{School or grade enrollment} \times \text{Absolute value of} \left(\text{Individual white student percentage} - \text{Districtwide white student percentage} \right)$$

$$\left(\text{Number of white students} \right) \times \left(100 - \text{Districtwide white student percentage} \right) + \left(\text{Number of nonwhite students} \right) \times \left(\text{Districtwide white student percentage} \right)$$

$$L = 100\% \times \left\{ 1 - \frac{\text{Sum of} \left(\text{School enrollment} \right) \times \text{Magnitude of} \left(\text{Individual white student percentage} - \text{Districtwide white student percentage} \right)}{\left(\text{Number of white students} \right) \times \left(100 - \text{District-wide white student percentage} \right) + \left(\text{Number of nonwhite students} \right) \times \left(\text{District-wide white student percentage} \right)} \right\}$$

$$Q = 100\% \times \left\{ 1 - \sqrt{\frac{\text{Sum of} \left(\text{School enrollment} \right) \times \left(\text{Individual white student percentage} - \text{Districtwide white student percentage} \right)^2}{\left(\text{Number of white students} \right) \times \left(100 - \text{District-wide white student percentage} \right)^2 + \left(\text{Number of nonwhite students} \right) \times \left(\text{District-wide white student percentage} \right)^2}} \right\}$$

If we divide the computed m value by the maximum m value, the new, normalized measure will lie in the range 0-1; the low values will correspond to desegregated schools, the high values to segregated schools.

Since higher numbers generally signify progress toward an objective, it seems appropriate to convert the racial balance measure so that the more integrated the schools the higher the score. This relationship is achieved by subtracting the measure, m, as computed above, from unity and multiplying the difference by 100 percent. The new measure will be identified as L. Now we have scaled the metric from zero to 100. The zero value would result from each school housing only one race (full segregation), and the 100 value would result from each school exactly reflecting the district-wide racial composition for its type of school. An intermediate value of 70 may then be interpreted roughly as 70 percent integrated. See equation above.

A quadratic measure of racial balance takes into account the amount of the deviation; that is, the more segregated a school, the greater the effect produced by a unit increase in segregation. The quadratic measure of racial balance, Q, is shown above.

As described above, both the linear and the quadratic measures are biracial; that is, they quantify the degree of segregation of a particular race within the total population. A single quadriracial measure is also useful to tell how segregated the entire system is. We developed a composite measure that combines the four biracial measures.

Now we have means of keeping score on degrees of racial balance under present attendance policy and under alternative policies that might be proposed. The composite quadriracial indexes for the 1966 attendance patterns are as follows:

Measuring 1966 racial balance
Scale: 100 = district-wide average
o = segregation

	Absolute	Base 100
Elementary	40.1	100
Junior high	50.3	100
Senior high	60.0	100
Composite	46.8	100

The subsystems varied from 40 percent integrated at elementary level to 60 percent integrated at high school level. The higher percentage at high-school level reflects the larger attendance area served by a large school.

We transformed absolute measures of racial balance to a base 100 figure because we interpreted our assignment from the school board as that of finding and evaluating means of *improving* racial balance. By converting to base 100 we could answer directly what percent improvement over 1966 would be achieved by any given alternative.

Projecting School Population in 1971

The next step was that of estimating the school population for some future year by grade, by race, and by census tract. This was done for 1971, by which time it is estimated the minority children will account for somewhat larger shares of total enrollment. The estimates show a small decline in total enrollment, but a growth in Negro enrollment from 26 percent to 34 precent and in Oriental enrollment from 18 percent to 20 percent. White

TABLE 1—ALTERNATIVE ATTENDANCE PATTERNS

Alternative	Grade organization	Academic senior high school	Students bused interzone	
			Elementary	Secondary
A-1	6-3-3	Lowell	0	0
B-1	6-3-3	Lowell	0	2,840
B-2	6-3-3	None	2,270	3,390
B-3	6-3-3	Lowell	2,270	3,830
C-1	3-3-3-3	Lowell	620	2,840
C-2	3-3-3-3	None	2,570	3,390
C-3	3-3-3-3	Lowell	2,770	3,640
C-4	3-3-3-3	Benjamin Franklin	2,570	4,470
C-5 Close Poly	3-3-3-3	Benjamin Franklin	2,800	6,430
D-1 Pairing	3-3-3-3	Lowell	8,750 (2-way)	. . .
D-2 Pairing	3-3-3-3	Benjamin Franklin	6,930 (2-way)	8,440
E-4	4-4-4	Benjamin Franklin	1,020	5,470

and Spanish surname enrollments show offsetting declines.

Alternative Attendance Patterns

Table 1 presents the 12 alternative attendance patterns that were evaluated. The alternatives differ in grade level organization, whether or not it is assumed there will be a specialized academic senior high school open to qualified students from the entire city, and in the number of students transported from one part of the city to another.

Alternative A sought improvement in racial balance only through adjusting attendance boundaries. The several B Alternatives assumed that feeder concepts would apply such that all of the graduates of a given elementary school would feed a specified junior high school, and similarly the graduates of a specified junior high school would feed a specified senior high school. In existing practice in San Francisco, the attendance boundaries for each of the three school levels are drawn more or less independently of one another. School capacities are such that a senior high school can accommodate the graduates of about two junior high schools, and a junior high school can accommodate the graduates of four to six elementary schools. By combining feeder schools of offsetting racial compositions, it is possible under feeder attendance policies to improve racial balance in the junior and senior high schools. The variations within the B Alternatives come from different assumptions about the academic high school and amounts of interzone busing. In the C Alternatives, a grade level reorganization to 3-3-3-3 was assumed. With each elementary school serving a small grade span some educational advantages can be achieved. Also the attendance area is approximately twice as large, thus giving some opportunity for improvement in racial balance. The variations of C included the possibility of relocating the academic high school more centrally to the existing Benjamin Franklin Junior High School site.

TABLE 2.—RACIAL BALANCE MEASURES (BASE 100)

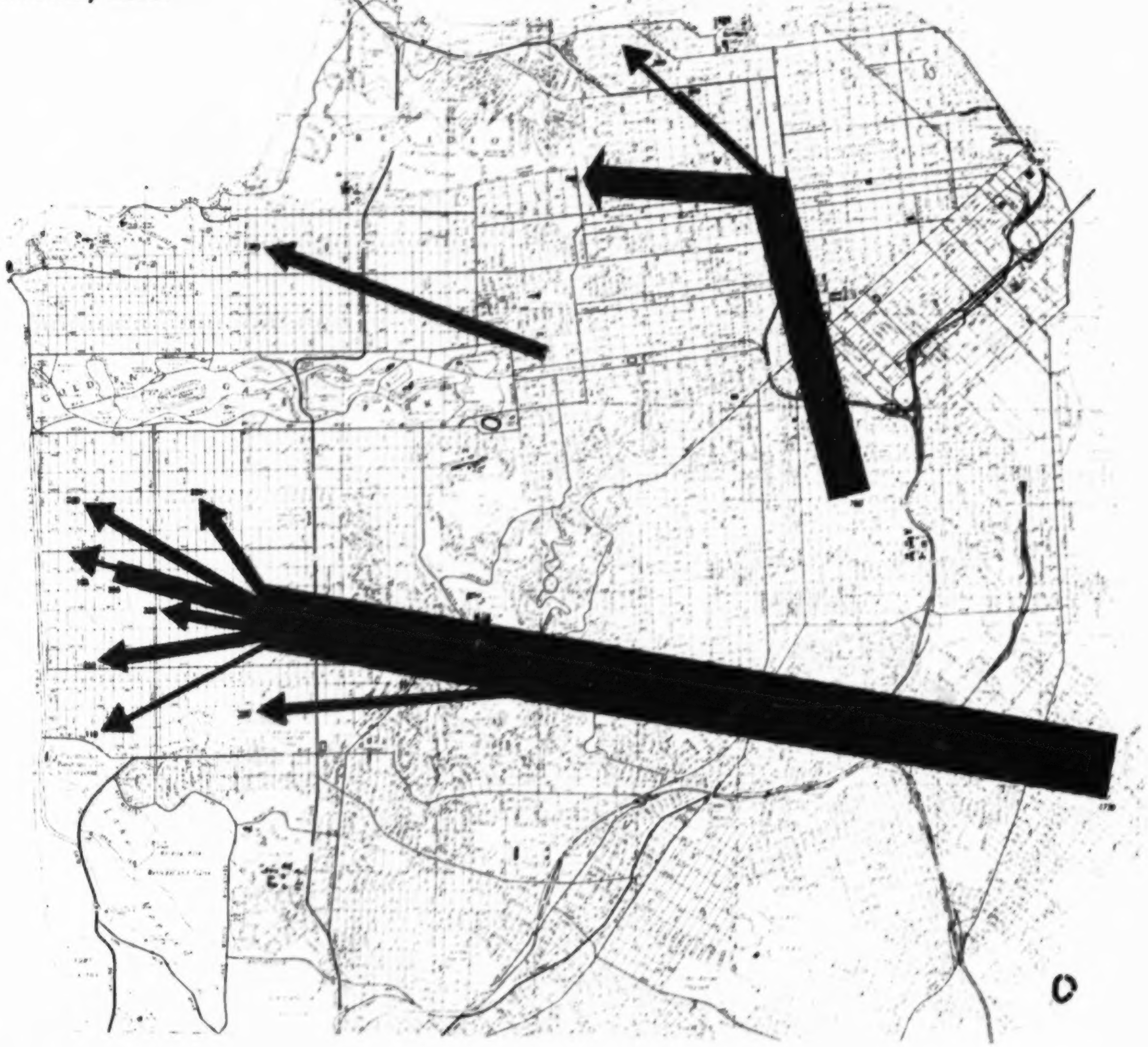
Attendance pattern 1966	Elementary 100	Junior high 100	Senior high 100	Composite 100
A-1	106	...	...	...
B-1	93	111	110	105
B-2	114	120	114	118
B-3	114	123	113	118
C-1	104	111	110	110
C-2	125	120	114	122
C-3	125	123	113	123
C-4	125	128	114	125
C-5	116	134	117	123
D-1	160	...	...	...
D-2	145	148	131	144
E-4	105	115	115	121

In Alternative D, elementary schools showing extremes of racial imbalance were paired, combining their two attendance areas and assigning all the students to one of the schools for grades 1-3 and to the other school for grades 4-6.

Finally in Alternative E it was assumed the grade level structure would be reorganized to 4-4-4. This alternative included combining several adjacent schools and expanding them into educational parks.

When the pupil attendance alternatives are applied to projected enrollment for 1971, the racial balance measures shown in Table 2 result. Note that the alternative of redrawing attendance boundaries "A" yields but little improvement in racial balance. The adoption of feeder patterns, together with some interzone transporta-

SCHOOL BUS DESIRE LINES
Elementary Level



tion—the B Alternatives—accomplishes some improvement, particularly at junior high-school level. A 25 percent improvement in elementary-school racial balance is achieved under the C Alternatives.

The D Alternatives require pairing of schools showing extremes of imbalance. They provide for two-way busing—that is, out of, as well as into, higher socioeconomic neighborhoods. The D Alternatives offer considerable improvement in racial balance measures.

Transportation Costs

The requirements for student transportation were calculated by analyzing in detail the student flows that would be involved in the Alternative C-5 as a base case from which costs of other alternatives could be estimated. By analyzing student flows, traffic desire lines could be generated for each of the levels of schools. Traffic desire lines for elementary are shown in the city map. Buses were assigned and scheduled to satisfy these desire lines. By this scheduling process the numbers of buses and bus miles daily were developed for three standard sizes of school buses. The resulting bus fleets required to provide timely pickup and delivery service to all students comprised 87 buses of 67-seat capacity, or 68 buses of 79-seat capacity, or 62 buses of 91-seat capacity.

Costs of transit and conventional school buses were obtained from a major school bus manufacturer. They range from $12,100 for the conventional 67-seat bus to $28,700 for the 91-seat transit bus.

Other costs associated with transportation of students were determined, including parking areas for buses, administrative staff, maintenance facility buildings, and staff and operating personnel required. These requirements were determined by examining actual district-owned and operated school bus systems of varying fleet sizes in several California school districts, and by establishing a relationship between fleet size and, for example, administrative staff and operating personnel requirements. Salaries and wages were obtained from the districts visited. Land costs were obtained by consultation with real estate firms in San Francisco. All costs were treated parametrically, with fleet size the principal variable. This approach presents costs in a way that requirements and costs could be derived for any size of bus fleet.

The requisite facilities, personnel, and equipment were described for each of the three bus sizes. A cost schedule was prepared for this description to show capital and operating costs for the first four years. The cost summary for a fleet of 91-seat transit buses is given in Table 3.

The three bus sizes were compared in capital and operating costs for the fourth and succeeding years as shown below:

Bus size	Capital cost (000)	Annual operating cost—4th year on (000)
67 seats	$1,640.9	$399.4
79 seats	2,199.9	344.7
91 seats	2,236.7	321.2

To assist the school district in choosing which size of bus might be most economical, cost comparisons were made to calculate the approximate average annual rate of return on the additional investment that would be tied up in the largest or 91-seat bus. The calculation shows that the better operating economy of the

TABLE 3.—COST SUMMARY: FLEET OF 91-SEAT TRANSIT SCHOOL BUSES
(Thousands of dollars)

Item	Year 0	1	2	3	4
Capital costs					
Buses	$258.3	$200.9	$803.6	$516.6	$ ...
Land, building, and equipment	457.3	...	...	...	...
Total capital	$715.6	$200.9	$803.6	$516.6	$ ...
Operating costs					
Director and staff	...	30.5	30.5	45.5	53.8
Drivers	...	19.8	37.1	110.7	165.1
Mechanics	...	9.7	9.7	35.0	43.2
Fuel and parts	...	3.7	10.1	32.4	44.2
Insurance	2.2	3.8	10.6	14.9	14.9
Total operating	$ 2.2	$ 67.5	$ 98.6	$238.5	$321.2
Total cost for year	717.8	268.4	901.6	755.1	321.2

large bus would yield a 13.8 percent return on the incremental investment over the least investment alternative of the 67-seat bus fleet.

All the foregoing calculations were made for a base case, that of Alternative C-5. Extrapolations of costs results for this base case were made by developing relationships between costs and number of students transported. The relationships are as follows:

Capital costs (in thousands of dollars) = 130 + 0.2236 × number of students

Annual operating costs (in thousands of dollars) = 30 + 0.232 × number of students

Transportation costs for six of the alternatives are shown in Table 4.

Facility Costs

The several alternative attendance patterns were devised to make maximum use of present and planned school capacity. However, some capacity imbalances were unavoidable because of the efforts to use one-way busing from lower to higher socioeconomic areas (except in the D Alternatives), because feeder attendance rules were observed, and because racial balance was improved. The facility requirements are shown in Table 5. The San Francisco District uses the term "bungalow" to describe its relocatable classrooms.

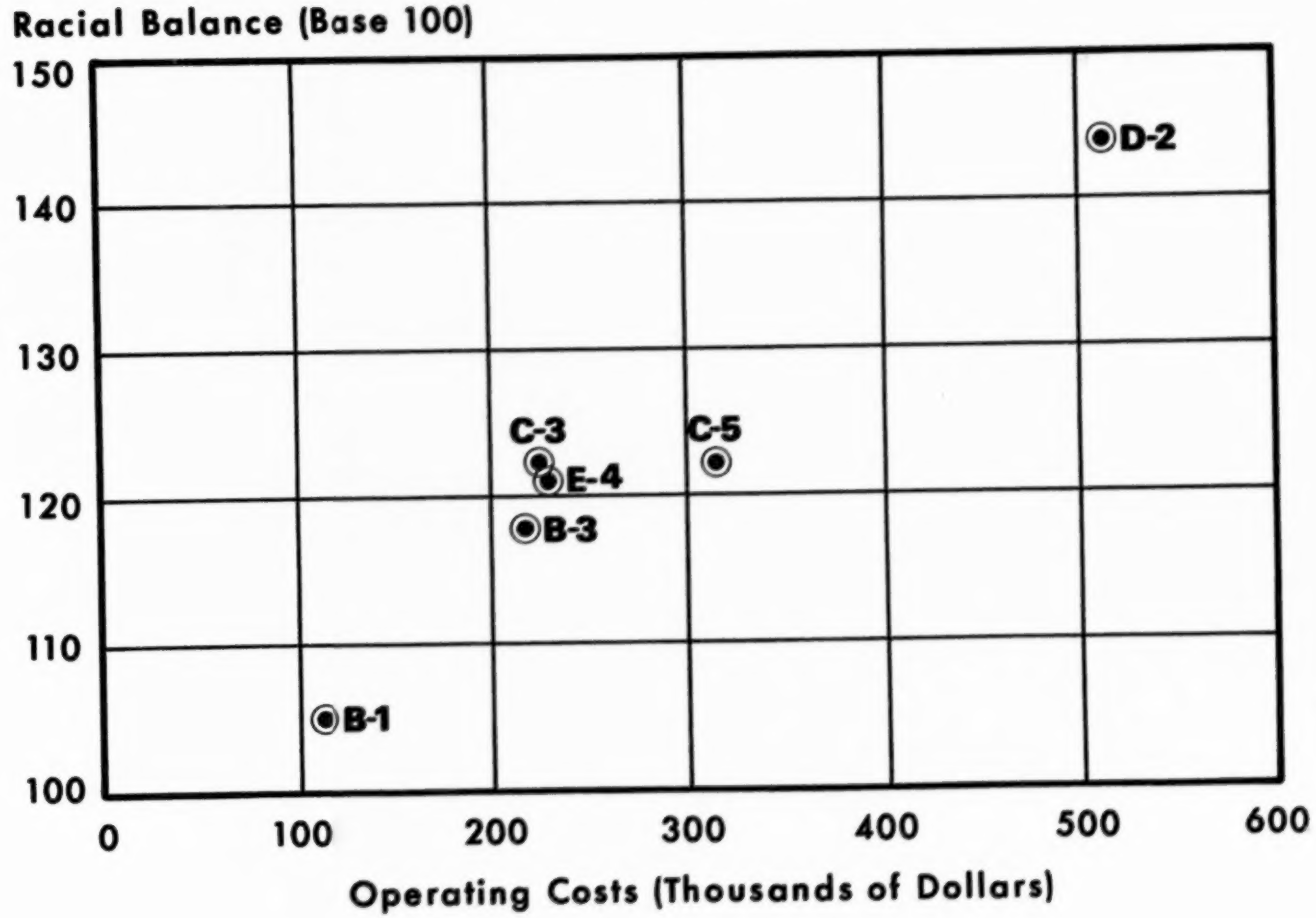
Facility unit costs were based on recent district experience in construction costs. The cost factors were $50,000 per new elementary-school classroom, $80,000 per new junior or senior high-school classroom, and $10,000 to move and relocate a bungalow.

TABLE 4.—TRANSPORTATION COSTS

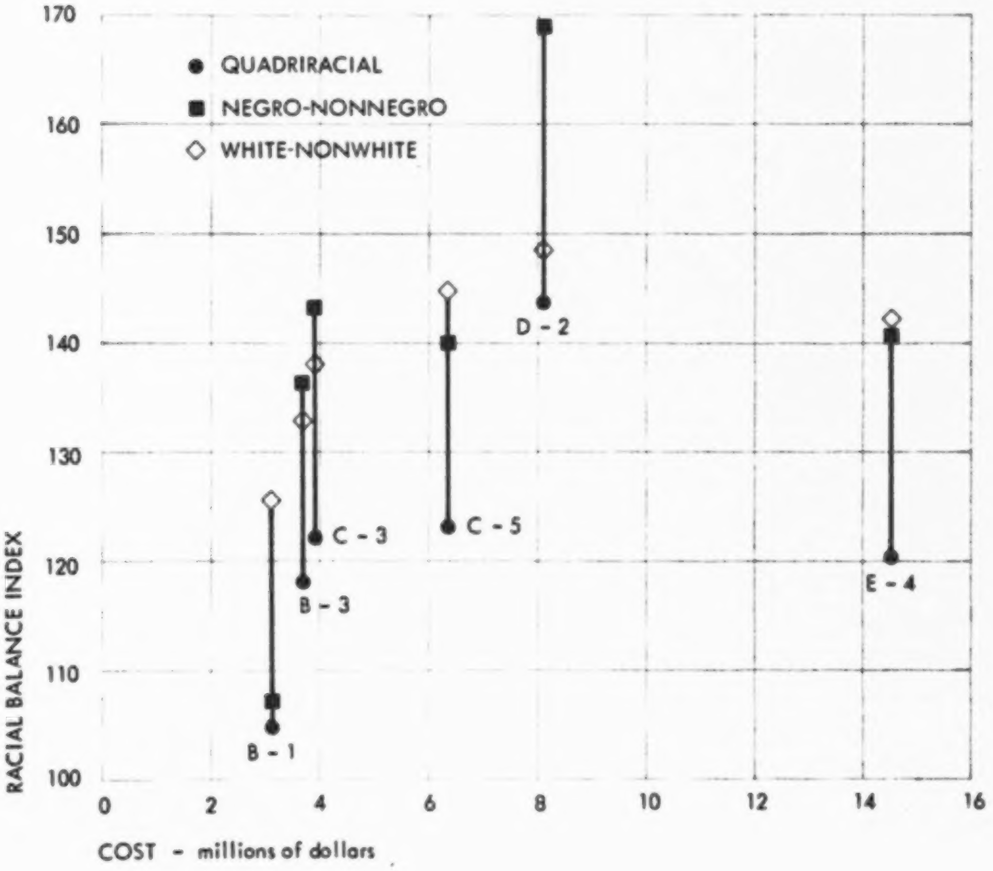
Item	B-1	B-3	C-3	C-5	D-2	E-4
Students transferred	2,840	6,100	6,410	9,230	15,365	6,490
Capital costs (thousands)	$765	$1,493	$1,563	$2,194	$3,566	$1,581
Annual operating costs (thousands)	111	215	225	315	512	228

ANNUAL OPERATING COSTS

Cost Effectiveness of Alternative Patterns



CAPITAL COSTS
Cost-Effectiveness of Alternative Patterns



Cost-Effectiveness Comparisons

The relationship of cost and effectiveness for the various patterns is shown in terms of capital costs in the graph. It shows the clustering of the quadriracial effectiveness index between 115 and 120. Also indicated is a crude, but relatively constant, relationship between the increase in quadriracial balance and the increase in capital cost in the range studied: It appears that each increment of 10 percent of racial balance improvement (by the index selected) adds approximately $1.3 million of capital costs. The E-4 pattern is an exception to this relationship, a deviation caused by the high cost of modifying the secondary-school facilities to accommodate their increased enrollment from the added grade level at both junior and senior high school. The graph presents similar data for the operating costs and racial balance measures for the selected alternatives.

Also indicated in the cost-effectiveness charts are the racial balance

TABLE 5.—FACILITY MODIFICATION COSTS

Item	B-1	B-3	C-3	C-5	D-2	E-4
Elementary						
Bungalows moved	3	5	27	28	19	0
New classrooms	0	0	0	7	10	0
Secondary						
New classrooms	28	26	26	44	48	161
Total costs (thousands)	$2,270	$2,130	$2,350	$4,150	$4,530	$12,880

measures for the white—non-white and Negro—non-Negro indexes for the alternative patterns. In all cases, these values lie above the quadriracial index, indicating the greater degree of integration achievable for students of these races, as compared with the Spanish and Oriental students.

Summary

The procedure used in this study was the following:

1. Objectives were stated.
2. A measure of effectiveness was designed to keep score on the degree to which alternative policies permitted reaching the objectives.
3. Alternative attendance patterns were formulated to give a range of possible solutions.
4. Each alternative was evaluated in effectiveness and cost terms. Parametric costing was employed wherever it would contribute to flexibility.
5. Evaluated alternatives were arrayed and compared in effectiveness and cost terms to assist the decision makers in assessing possible changes in attendance policy.

Systems Approach to Business Management in a Large City

James W. Tyler

EFFICIENT PROGRAMMING of school business information is essential to provide decision makers with the accurate and prompt information necessary to effective operation of a large school system. It is imperative to use the best system and the best equipment to accomplish this purpose. In a large school system, at the present time, a comprehensive system using automatic data-processing equipment is required. The purpose of this report is to describe how such a system functions in one large school system (Richmond, Virginia).

The program discussed in this paper serves a school system of approximately 44,000 pupils enrolled in kindergarten through twelfth grade. The system employs more than 3,000 persons, of whom approximately 2,100 are certified teachers. The general fund operating budget for 1967-68 is $23,190,896. In addition, construction and special funds of approximately $7,000,000 are administered by the school system.

Automatic data-processing equipment of the punch card unit record type was installed in 1958. An electronic computer was installed in 1964. The computer installation contains two types of machines, the computer and the input data preparation machines. The computer is an IBM-1440 Data Processing System which consists of: one IBM 1441 Processing Unit, two IBM 1442 Card Read-Punches, one IBM 1443 Printer, one IBM 1447 Console, two IBM 1311 Disk Storage Drives, and eight IBM Disk Packs. The input data preparation machines for the installation are three IBM 24 Card Punches, two IBM 56 Card Verifiers, one IBM 77 Collator, two IBM 82 Sorters, one IBM 519 Document Originating Machine, and one IBM 557 Alphabetic Interpreter.

The computer installation[1] performs the following business management functions: budgetary account-

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[1] For a complete description of this system, refer to: Nelson, Byron B., Jr. *The Conversion of a Unit Record Data Processing System to a Computer Data Processing System for School Business Applications.* Doctor's dissertation. Nashville, Tenn.: George Peabody College for Teachers, 1965.

ing, warehouse inventory control, payroll, and personnel budgeting.

Budgetary Accounting

Under the system, budget accounts are controlled on a daily basis. Before a purchase order is issued, an encumbrance is made against the budget account. A daily check insures that funds are available in a particular account. A daily budget analysis shows for each budget classification: the warehouse issues for the current month, disbursements to date, encumbrances to date, the total expense to date, the total funds available, and the unencumbered balance.

The reports on school allotments for instructional supplies and custodial supplies are also produced on a daily basis. These reports indicate the school allocations, the amounts committed on purchase orders and unfilled warehouse requisitions and back orders, the expense to date, and the uncommitted balances. The school allotments are internal accounts, and the commitments to the school accounts are not true encumbrances. The actual funds are encumbered to the appropriate budget classifications. By showing the commitments on the school allocations, the actual amount of money a school has spent and the amount that is available is ascertained on a daily basis.

Warehouse Inventory Control

Warehouse requisitions are completed in duplicate with the originator keeping one copy and forwarding the original to the Finance Office for auditing. A number is assigned to each requisition, after which it is forwarded to the Data Processing Center. The budget code, location code, requisition number, catalog number, and quantity ordered for each item on the requisition are punched into a card. The cards representing a requisition are then fed into the computer where a series of operations take place. The computer scans the catalog records contained on a disk pack to insure that the number corresponds to a number on the disk pack. The computer then prints an issue ticket containing the catalog number, requisition number, budget number, and quantity ordered from the card, and the description and unit of issue from the disk pack. In the same operation the computer determines the total cost for the requisition by extending the price times the quantity ordered of each item and adding the subtotals. While this operation is taking place, the computer reviews the budget classifications and school allotments to determine whether or not funds are available. If funds are not available, the information is printed by the console and the computer is stopped. The computer operator holds the cards for which the computer indicates funds are not available, until an administrative decision is made as to whether or not the items will be issued.

The information on warehouse requisitions is printed in four copies by the computer. One copy of the issue ticket remains in the Data Processing Center. The three remaining copies are forwarded to the warehouse to be filled. The warehouse clerk indicates on the issue ticket the quantities of each item filled or back ordered. One copy of the issue ticket serves as a delivery ticket, the second copy is kept as a warehouse record, and the third copy is returned to the Data Processing Center.

When the issue ticket is returned to the Data Processing Center, the issue cards for the ticket are pulled from the suspense file and entered into the computer. The warehouse inventory records are updated at this point to reflect the actual issues. The computer then makes the charges to the appropriate budget classifications and school allotments, and liquidates corresponding commitments. A charge ticket is then prepared by the computer from information contained on the disk pack. For each requisition, a charge ticket containing catalog description, catalog number, requisition number, limit of issue, quantity delivered, quantity back ordered, unit price, and amount charged is prepared for the school or department which has ordered the items. In cases where items are back ordered, the commitments for these items are kept on the disk pack. Two back order cards and an issue card are returned to the warehouse for each item back ordered. When the back order is filled, one card serves as an issue ticket and the other as the warehouse record of issue. The issue card is returned to the Data Processing Center where the inventory records are updated, the charges made, and the commitments deleted on the appropriate budget classifications and allotments. A charge ticket is then prepared for the school or department.

Payroll Procedures

The major amount of time required for payroll preparation in the computer installation is the time required for card punching and verification. The computer is programmed to encumber the annual salary or wages for each employee, and each month the encumbrance is reduced by the amount paid. In cases where the gross salaries are reduced because of employee absences, the unencumbered balance is increased by the amount of the reductions. Amounts paid for overtime reduce the unencumbered balances, but do not affect the encumbrances. The computer is programmed to alter the encumbrances to reflect changes in pay status of personnel, personnel entered on a payroll, and personnel deleted from a payroll.

Budgeting of Instructional Personnel by Computer

An outgrowth of the systems approach for processing of school business information with the use of the computer is the development of a program to prepare the instructional personnel budget on the computer. Instructional personnel are budgeted in the following categories: principals, instructional services, pupil personnel services, senior high-school teachers, junior high-school teachers, elementary-school teachers, and adult education teachers. Instructional personnel are also budgeted within categories by salary steps, degrees, and number of months employed.

The lengths of contracts are 9½ months, 10 months, 10½ months, 11 months, and 12 months. For personnel employed longer than 9½ months, the salaries are extended on the basis of the basic teachers' salary schedule. Salary steps are based on the length of service. There is a 17-step salary schedule for teachers, and a seven-step salary schedule for principals and supervisors. The salary schedules for principals and supervisors are based on ratios of selected steps of the basic teachers' salary schedule and on the length of contract. Compensation for advanced degrees and extra duties are added to the base salary.

One of the primary inquiries concerning a new salary schedule is its cost in relation to the current salary schedule. A computer program shows the costs of the present salary schedule and the proposed salary schedule and the difference between the two. The new salary schedule is punched into cards, and this information is stored in the processing unit of the computer. When the personnel cards are fed into the computer, the proposed salary is calculated for each employee. This information is listed by job title, salary step, salary, and number of months employed. Categories for teachers are further broken down by master's degree, bachelor's degree, and nondegree personnel. Costs for extra compensation are projected separately for each budget category. The cost of a proposed salary schedule can be determined as can the cost of each salary step.

To determine the cost of increments, the personnel budget shows the cost of the present and proposed salary schedules for personnel on the current salary steps. Then the personnel budget is prepared to reflect an increase of one salary step for all personnel who have not reached the top of the salary schedule. The difference between the two reports gives an estimate of the amount budgeted for increments.

The preliminary personnel budget is prepared approximately seven months prior to the beginning of the fiscal year. The number of additional personnel is projected, based upon the estimated enrollments and expected expansion of services. Positions for additional personnel are included in the budget as prepared on the computer by indicating the job titles on the cards and placing these positions on the first step of the proposed salary schedule.

When developing a systems approach to business management, it is important to plan for the future. The International City Manager's Association suggests that the following principles should be kept in mind in planning an integrated system.[2]

1. *Comprehensiveness.* From the standpoint of analysis, the more comprehensive the viewpoint from which the system is designed, the better use it holds for the future. The system analysis and design should begin at the most comprehensive level and be scaled down when appropriate to serve functional needs.

2. *Focus Attention on Specific Items of Data.* The system should focus on specific items. The question should be asked, "What information is used to perform a particular task to further the objectives of the city?" Once this question has been adequately answered, a system can be designed to supply the required data. This simple approach will avoid many mistakes. Too often a modern systems approach is designed to accomplish traditional objectives and to effect traditional procedures.

3. *Prepare for the Establishment of Central Data Files Within the City According to Environmental and Internal Categorization.* Each system should be designed to collect data on an internal and an environmental basis. Everyone should contribute data to the central file (computer); from these files clerical and management personnel would draw data for departmental activities.

4. *Inventory Data Items Within All Departmental Files from the Information Category Viewpoint.* When central files are established with the city school system, an inventory should be made of the items of data within

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[2] Institute for Training in Municipal Administration. *Municipal Finance Administration.* Sixth edition. Chicago: International City Managers' Association, 1962. p. 473-74.

all departmental files from the information category viewpoint. Included in the inventory will be forms analysis, flow charts, and identification of data not used but desired in the performance of a particular function. The end product of the data item inventory is a complete list of the items kept in the central files.

5. *Input Coordination.* It is imperative to coordinate data collection. Focus must be directed to specific items of information to determine how each can be collected best. A common fault of many city school systems and State Departments of Education is that the various bureaus or departments collect similar data, placing an added burden on the schools furnishing the information and upon the computer system.

In conclusion, emphasis should be focused upon the purpose of school business administration. Business management is not educational in nature except in minor instances. The real test of the value of a systems approach to business management is the contribution it makes to the education of children and adults.

Simulation of Change and Reform in State School Finance Systems

Introduction

THE FOLLOWING FOUR PAPERS are a cohesive set of research projects based on the principle of *simulation of change in the apportionment of state school support*. Each study is heavily computer based; all are related to conditions in Oregon or Washington. Each tests the effects of change against a set of pre-established criteria of an effective state school support system.

The four types of simulated change in state school support system reported are:

1. Farner's paper concerns desperately needed but systematic and often routine changes in the existing Oregon system. It analyzes changes in the proportion of flat grants, level of the foundation program, and basis of the local contribution.
2. Usitalo's paper presents a comparison of the old and a recently enacted state formula in Washington.
3. Rose's paper presents the variable use of components of the property tax base in the local contribution element of the Oregon system.
4. Rath's paper covers recognition of nonschool property taxes in the local contribution element in the Oregon system.

Each research project utilized a set of criteria for the measurement of the effectiveness, equity, and compatibility of a state school support system. Four criteria were common to all four projects:

1. *Purpose of state aid*—State aid should equalize local property tax rates among school districts in support of an adequately defined foundation program.

Measurement data—The variations among local millage levies as measured by the standard deviation. No variation of millage levies in support of the foundation program is desirable.

2. *Purpose of state aid*—State aid should relieve and/or stabilize local property millage required to support the foundation program.

Measurement data—The mean local millage levy required to reach the uniform foundation program. The relationship between the computational local contribution rate and actual mean millage levy assumes importance.

3. *Purpose of state aid*—State aid apportionments should utilize scarce state resources in an efficient manner.

Measurement data—The percent of state aid represented by "negative equalization." Negative equalization =the sum of excess state and local resources beyond program requirements.

4. *Purpose of state aid*—The amount of state aid should be reasonable in view of established levels.

Measurement data—Changes in the gross amount of required state aid to implement alternative state school aid apportion plans.

Farner used a fifth criterion:

5. *Purpose of state aid*—State funds should be used to equalize educational opportunity by guaranteeing a realistic foundation program for each pupil, regardless of residence.

Measurement data—The level of the foundation program in relation to cost of an educational program.

Usitalo also used the criteria above, but varied the level of the foundation program according to the size of the district.

Farner's, and to a certain extent also Usitalo's, projects were to be used in the political arena to attempt to secure public acceptance of proposed changes. In Usitalo's study the changes had already been enacted by the state legislature so that his project was related to allaying concerns about the new laws.

This type of analysis requires different procedures as the researcher moves from the theoretical toward the political arena. Emphasized use of a term such as *standard deviation* to measure variation in local district millage to reach a controlled level of support requires varying levels of explanation to audiences such as this conference, to the press, to the assembled school district superintendents, to members of the state and local school boards, to the legislature, and to the public. Furthermore, with the type of computer performance we are accustomed to today it is tempting to inundate an audience with print-outs or excessive detail and, in fact, submerge a potentially convincing finding from public view and acceptance.

I. Simulation of Revision and Improvement of the Oregon State School Support System

Frank Farner

THIS RESEARCH HAS NOT been formally reported in published form because it is essentially a set of working papers for an advisory committee of superintendents and others to the Oregon State Department of Education as part of the preparation for the 1965 session of the state legislature. Only in the later stages of the work did systematic testing of alternatives against criteria emerge as a method and pull the project together into a reasonably cohesive effort.

Leaders of Oregon educational administration identified three deficiencies in their state's school support system.

1. Of course, the primary deficiency was a low proportion of state support which had caused property taxes to increase much more rapidly than other taxes. A public opinion crisis regarding the property tax had developed. As a newcomer from California at the time, I resisted the easy temptation to note that the high millage Oregonians objected to seemed low in comparison with those I had known in California.

2. A mandatory proportion of 80 percent of total state support to be distributed as a flat grant reduced the effectiveness of equalization. The high flat grant benefited Portland, the small eastern districts and a few other districts with high valuation per student.

3. A decade before, the state had introduced a county-wide[1] tax to raise approximately half of local property generated revenues for local district operation. The laudable equalization resulting from this practice was partially negated by the fact that the relative gain or loss by a district from the county equalization was not recognized at all in the apportionment of state support. Cases of double equalization aid were fairly common, especially in bedroom suburbs. Some districts with low valuation per pupil in state terms were high in their county and hence gave up a portion of their state equalization in the county-wide tax.

Revisions in the state system to overcome these three deficiencies were evolved by the advisory committee. The methodology which this project

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[1] Actually the unit for local contribution in Oregon is called an Intermediate Education District (IED) which differs slightly from counties in cases where local districts overlap county boundaries.

reports came into being as we attempted to systematically explain the effects of the changes proposed to correct the deficiencies.

The first step was to generate a computer program which would:

1. Receive necessary key data from each of the more than 400 districts of the state
2. Compute the apportionment for each district under each of two designated formulas (one was usually the existing or base program)
3. Calculate various measures of the effect on districts
4. Produce output for each district showing effects of each plan on each measurement and the difference between the two plans
5. Assemble and output a state summary of key data.

In this project we used standard statistical programs to analyze output cards to derive means and standard deviations in key measurements related to the criteria. (Rose later incorporated this step in the basic analysis program.)

All output was put on stencils, and everyone at the meetings was provided with a copy.

Over a period of five months, more than 35 runs were made with a variety of combinations of input factors to test even the most casual ideas of members of the study committee. The output consisted of a cover sheet for the run showing at the top of the page the input variables for the two plans being tested and at the bottom of the page state summary data. An example of such a sheet is on page 126. This was followed by three sections of district-by-district data (plan 1-base, and plan 2-alternative) and the difference between the two.

Three basic types of manipulation in the state formula were made in the many plans tested:

1. Increased foundation program
2. Changes in the proportion of total state aid distributed as a flat grant
3. Varying levels of the property tax contribution to the foundation program and varying proportions of this millage to be at the county and district level. In all cases, both county and district contributions were recognized in state support distribution.

Provisions were made in the program to alter the handling of various other lesser problems in Oregon, such as counting of PL 874 receipts, and forest reserve income. Included later was a district reorganization feature that made it possible to designate in the run certain district consolidation and unification actions and compute all data on that basis.[2]

Eventually, as the blizzard of paper associated with reproduction of the output of all these runs clouded issues, it became important to synthesize findings in brief tables. These became the key results of this and the later simulation studies reported today.

Eleven possible apportionment formulas designed to test the effects of systematic changes in certain elements are shown in Table 1 and described on page 127.

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[2] The writer, in two other simulation studies, tested the effect of school district organization on state aid:

Farner, Frank. *Effect of California School District Organization on State Equalization Aid.* Doctoral dissertation. Claremont, Calif.: Claremont Graduate School, 1960.

Farner, Frank. *Financial Implications of the Reorganization of the Non-Unified School Districts of Oregon.* Prepared for the Oregon Legislative Interim Committee on Education. Eugene, Oregon: University of Oregon, Bureau of Education Research, 1964.

EQUALIZATION AID ALTERNATIVES

RUN DESIGNATION CEAO2 DATE 02/15

VARIABLE CONSTANTS	BASE	ALTERNATIVE
FOUNDATION PROGRAM/PUPIL	338.00	400.00
FLAT GRANT/PUPIL	108.58	100.00
DESIRED EDUCATION EXPENDITURE/PUPIL	500.00	500.00
IED CONTRIBUTION MILLAGE	. . .	4.60
DISTRICT CONTRIBUTION TO FOUNDATION PROGRAM MILLAGE	8.62	4.60

CORRECTION FACTOR DETAILS

ITEM	FOR RES	874	O+C REC
PERCENT	1.00	.66	0.00

STATE SUMMARY	BASE	ALTERNATIVE
TOTAL FLAT GRANT	47259649	43525190
TOTAL EQUALIZATION AID	12004752	27932300
TOTAL STATE SCHOOL SUPPORT	59264401	71457490
TOTAL EQUALIZATION AID (ALGEBRAIC)	1297075	26013693
NEGATIVE EQUALIZATON	10707676	1918607

PERCENTAGES		
TOTAL FLAT GRANT	79.7	60.9
TOTAL EQUALIZATION AID	20.2	39.0
TOTAL STATE SCHOOL SUPPORT	100.0	100.0

Base—A very close approximation of the then existing Oregon plan.

Alternatives

First Series—	Local contribution shifted totally or partially away from district to county
1A	Same as A1 Base except that the total local contribution is shifted from district to county
1B	Same as A1 Base and A1 except that the local contribution is divided equally between county and district
Second Series—	Higher foundation program
2A	Foundation program increased, otherwise same as A1 Base
2B	Two changes from A1 Base—foundation program higher *and* local contribution divided equally between county and district
Third Series—	Higher foundation program *and* higher local contribution
3A	Higher foundation program and higher local district contribution but no county contribution
3B	Higher foundation program and higher local contribution divided equally between county and district
Fourth Series—	No increase in foundation program and sharp reduction in local contribution
4A	Same foundation program as A1 Base but lower local contribution all at district level
4B	Same as 4A but local contribution equally divided between county and district
Fifth Series—	Elimination and sharp reductions in flat grant
5A	Foundation program and contributions same as 2B but no flat grant at all
5B	Flat grant reduced to only $50, district and county contributions held at levels of 1A. Foundation program set at a level estimated to require about the same total state aid as base

Although the emphasis in this paper is on expounding the simulation method, a few key findings of interest to school finance researchers are listed below.

1. Criterion—Disparity of millage
   a. Disparity in millage is reduced most dramatically by increasing the foundation program (3A and 3B).
   b. Splitting the local contribution between district and county does not reduce disparity; in fact, it systematically increases it slightly (1B > 1A, 2B > 2A, 3B > 3A, 4B > 4A).
   c. Eliminating the flat grant has some effect (5A), but when the flat grant is not eliminated but reduced to only $50 (5B), disparity of millage is quite high.
   d. An unrefined standard deviation of millages may not be the proper measure of disparity of millage since a very small district has the same relative weight as a large district. Perhaps a weighting process should have been used.
2. Criterion—Reduce property tax burden
   a. The greatest reduction in mean millage resulted from a higher foundation program, i.e., greater state support (3A and 3B).
   b. Splitting the local contribution between county and district systematically reduces mean millage (1B > 1A, 2B > 2A, 3B > 3A, 4B > 4A).
   c. Elimination of, or reduction in, the flat grant does not reduce millage.
   d. The same comment regarding the standard deviation being unweighted may apply to mean millage as a measurement of reduced property tax burden.
3. Criterion—Efficiency in use of funds (reduction of negative equalization aid)
   a. All three reforms used in the 11 plans —increased foundation program, splitting the local contribution and elimination or reduction of flat grant reduced the relative amount of negative equalization.
   b. Plans 2A and 4A where all of the local contribution is at the county level are very low on negative equalization aid suggesting.

TABLE 1.—DATA FOR THE EVALUATION OF 11 APPORTIONMENT FORMULAS ON THE ESTABLISHED CRITERIA

Item	Base	Plan number									
		1A	1B	2A	2B	3A	3B	4A	4B	5B	1D
Variable constants											
Contribution to foundation program millage:											
County	0.00	8.62	4.31	8.62	4.31	10.00	5.00	6.00	3.00	4.31	4.31
District	8.62	0.00	4.31	0.00	4.31	0.00	5.00	0.00	3.00	4.31	4.31
Flat grant per pupil	$108	$108	$108	$108	$108	$108	$108	$108	$108	$0	$50
Evaluation criteria											
1. Range of millage (Standard Deviation)	4.0	4.6	5.4	3.1	3.6	1.2	1.7	4.5	4.8	3.2	4.8
2. Mean millage	13.6	15.0	14.7	12.8	12.5	10.8	10.4	13.0	12.8	12.8	14.7
Change in mean millage	0.0	+1.4	+1.1	−.8	−1.1	−2.8	−3.2	−.6	−.8	−.8	+1.1
3. Negative equalization as a percent of state funds	18.0	10.5	13.1	2.1	3.1	1.5	2.2	1.2	1.6	1.3	3.9
4. Amount of state funds (millions)	$59.3	$54.8	$56.1	$77.1	78.2	$97.3	$97.7	$78.3	$78.5	$76.8	$56.6
Change in state funds (millions)	$0.0	−$4.5	−$3.1	+$18.3	+$18.9	+$38.4	−$38.4	+$19.0	+$19.2	+$17.5	−$2.7
5. Adequacy of foundation program	$338	$338	$338	$400	$400	$480	$480	$338	$338	$400	$351

Table 1 discloses clearly a direct relationship between the proposed changes in the system and movement toward or retrogression from the ideal criteria presented for the evaluation of a good system. For example:

1. Reduced proportions of flat grant systematically reduced the disparity in local tax rates necessary to reach the desired educational program. Similarly, disparity in millage (standard deviation) was also reduced.
2. Of course, negative equalization (inefficiency in use of state funds) also decreased as flat grant proportion was decreased.
3. Logically, increased state support to a given program reduced the mean level of local (and/or county millage).
4. Recognition of the county contribution in most cases constricted disparity in millage.

In "poor" districts in "rich" counties an adverse effect was felt, but these were, after all, the heaviest "double equalization" districts.

The conclusions listed above and dozens of lesser ones are theoretically important but perhaps not as practically useful as certain other findings. An examination of the district-by-district output permits compilation of lists of districts adversely and beneficially affected by each change proposed.

In most cases where the mean or standard deviation moves one way as a result of a change, the effect on the majority of districts moves the other way. This is because the "rich" districts include the smallest of the districts and therefore an insignificant minority of the students. These districts tend to be unrepresented on state advisory committees and, as legislative reapportionment progresses, unrepresented in the legislature.

The district-by-district lists clearly give precise clues as to which proposals for change benefit the power structure—to put the situation in the most crass terms.

The simulation methodology presented here and supplemented in the companion projects to follow, serves two important purposes in school finance well:

1. The identification of truths about changes in program and/or
2. The pragmatic convincing of an electorate or a legislative body that appropriate reforms are possible, equitable, and efficient.

II. Predicting the Consequences of a New Formula for the State of Washington

Richard Usitalo

THE STUDY REPORTED here attempted to investigate the effects of a new distribution plan adopted by the 1965 Washington State Legislature.[1] The data used were actual revenue and attendance statistics for the common schools during 1963-64. The study population encompassed the 371 operating districts of the state. The fiscal distribution pattern examined through the use of computer simulation were:

1. The actual 1963-64 mix
2. A simulated 1965-66 mix (resulting from a transitional formula)
3. A simulated 1968-69 mix with a uniform local property tax assessment ratio
4. A simulated 1968-69 mix employing a penalty factor (built into the legislation adopted in 1965) to those districts that failed to achieve the uniform assessment level.

The objectives of this study were: (a) to investigate the principles of state support programs proposed by authorities in educational finance; (b) to formulate a set of criteria for use in evaluating past, present, and future school finance distribution formulas in the state; (c) to develop methods for measuring the effects of different mixes of fund distribution; (d) to apply these measurement methods of Washington's school finance formula; (e) to identify possible weaknesses in the formula; and (f) to recommend reforms to correct the identified weaknesses.

Six criteria were developed to serve as a frame of reference for appraising school fund distribution in the state of Washington. These were adequacy, partnership, equal effort, equal opportunity, efficiency, and experimentation. Space limitations prevent me from discussing each criterion and identifying the measurement methods employed. (Table 1 summarizes the methods employed in measuring effects of four formulas in the state of Washington.)

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[1] This paper incorporates many of the ideas developed in a study reported elsewhere: *An Analysis of School Fund Distribution in the State of Washington*, a thesis completed at the University of Oregon.

Dr. Usitalo is Curriculum Director, Olympia School District, Olympia, Washington.

TABLE 1.—METHODS EMPLOYED IN MEASURING EFFECTS OF FOUR FORMULAS IN THE STATE OF WASHINGTON

Criterion	Measurements Used
A. The adequacy principle	•A 1. Mean level of the adequacy index (guaranteed revenue/group mean expenditure)
	•A 2. Variance of the adequacy index
	•A 3. Degree of dependence on excess levy
B. The partnership principle	B 1. Partnership patterns in Washington from 1940 to 1964
	B 2. Responsiveness of assessed valuation to school needs
C. The equal effort principle	C 1. Mean level of the DEEM (desired educational expenditure millage)
	C 2. Variance of the DEEM
	C 3. Variance of assessed valuation per pupil
	C 4. Correlation of assessed valuation per pupil and family income
	C 5. Correlation of taxpayer effort and assessed valuation per pupil
	C 6. Correlation of effort (income) with DEEM
	C 7. Mean level of the effort (income) necessary to reach the group mean expenditure level
	C 8. Variance of the effort (income) necessary to reach the group mean expenditure level
	C 9. Correlation of effort (income) and median family income
D. The equal opportunity principle	D 1. Correlation between assessed valuation per pupil and expenditure level
	D 2. Correlation between family income and expenditure level
	D 3. Correlation between taxpayer effort and expenditure level
	D 4. District reorganization changes from 1945 to 1965
	•A 1. Mean level of the adequacy index
	•A 2. Variance of the adequacy index
	D 5. Interstate comparisons of certain demographic data
E. The efficiency principle	•D 4. District reorganization changes from 1945 to 1965
	E 1. Mean level of the guaranteed revenue
	E 2. Variance of the guaranteed revenue
	E 3. Overpayments to districts
	E 4. Controls placed on the use of funds
F. The experimentation principle	F 1. Mean level of the precentage of leeway funds
	F 2. Variance of the percentage of leeway funds
	F 3. Mean level of the millage necessary to raise an additional $50/pupil
	F 4. Variance of the millage necessary to raise an additional $50/pupil
	•E 4. Controls placed on the use of funds
	F 5. Stimulative funds appropriated

• Measures pertaining to more than one principle.

The variables used in the simulation were coded for ease in placing into a mathematical formula. (See Table 2.)

The fiscal mixes for each of the 371 school districts were obtained from the following formulas:

1963-64

$$\text{District guaranteed revenue/ADA} = [(\text{AV} \times 14 \text{ mills}) + \text{FG} + \text{EQ} + .166(\text{PUD}) + .69(\text{PL874}) + 1.00(\text{FFF} + \text{CTT} + \text{SECT})]/\text{district ADA}$$

1965-66

$$\text{District guaranteed revenue/EM} = [(\text{state ADM}_w \text{ support level}) \times (\text{DWF}) \times (\text{EM}) + .15(\text{AV} \times .014) + .60(\text{PL874} + \text{PUD} + \text{FFF})]/\text{district EM}$$

1968-69

$$\text{District guaranteed revenue/EM} = [[(\text{state ADM support level}) \times (\text{DWF}) \times (\text{EM}) + .15(\text{AV} \times .014 + \text{PUD} + \text{FFF}) + .25(\text{PL874}) - .85[(\text{AV} \times .014 \times 25/\text{AR} \times (1 - \text{AR}/25)]]/\text{district EM}$$

TABLE 2.—VARIABLES USED IN THE WASHINGTON FORMULAS

Variable	Code
1. Assessed valuation (1963-64)	AV
2. Flat grants (1963-64)	FG
3. Equalization funds (1963-64)	EQ
4. Public utility district receipts (1963-64)	PUD
5. Public Law 874 receipts (1963-64)	PL 874
6. Federal forest fund receipts (1963-64)	FFF
7. County real estate transaction tax (1963-64)	CTT
8. State equalization for above (1963-64)	SECT
9. Average daily attendance (1963-64)	ADA
10. Enrollment (10-1-63)	EM
11. Assessment ratio (1963-64)	AR
12. District weighting factor (1965-66)	DWF

The last of these formulas also served as the basis for the fourth mix, the only change being a uniform 25 percent assessment ratio. In this case, the AR variable input would be 25, which would cause the penalty factor to become self-cancelling.

Since economies and diseconomies of scale are evident in school systems, the 371 districts were stratified into eight enrollment classifications. This made possible the analysis of the effects on various sizes of districts rather than the sample as a whole.

The methods employed to measure for satisfaction of the criterion were described earlier. Twenty of the 28 tests employed were statistical. The basic statistics used were mean, standard deviation, Pearson product-moment correlation, and Spearman rank correlation.

Findings

Analysis of the data produced the following significant findings[2] in terms of the respective criteria.

The Adequacy Principle

1. The level of the adequacy index as expressed by the ratio of the district guaranteed revenue to the group mean expenditure increased significantly for school districts ranging in enrollment from 1,000 to 20,000 students with the application of the 1968-69 formula and a 25 percent assessment ratio. This group of districts represented approximately 60 percent of the public-school student population of the state. In school districts with enrollments of fewer than 1,000 students, the level of the adequacy index decreased significantly. The

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[2] When reference is made to the 1968-69 formula in this section, the assessment ratio is considered to be a uniform 25 percent.

four largest districts had no significant change.

2. The variance of the adequacy index was found to be significantly smaller for all sizes of districts under the 1968-69 formula than under the 1963-64 formula. This finding implies that the 1968-69 formula will provide greater fiscal equality than the 1963-64 formula.

3. During the 1956-1965 period, an increasing dependence on use of the excess levy was evident. This trend indicates that the foundation level has become increasingly less adequate.

The Partnership Principle

1. The local-state-federal partnership relationship has been quite stable since 1950.

2. Since the mandated 14-mill property tax has not been responsive to the needs of the school districts, heavier reliance upon the use of the excess levy has been necessary to maintain a stable partnership relationship. Improved assessment practices offer promise for increasing the responsiveness factor of the property tax, thereby reducing the need for excess levies.

The Equal Effort Principle

1. The level of the mean desired educational expenditure millage (DEEM) was significantly decreased for districts ranging in enrollments from 1,000 to 8,000 through the use of 1968-69 formula. Districts enrolling the remaining 70 percent of the state's population were unaffected.

2. The variance of DEEM was significantly reduced for districts ranging in enrollments from 100 to 8,000, through the use of 1968-69 formula. No significant change was apparent in the smallest and largest districts.

3. The 1968-69 formula produced a significantly larger variance in the assessed valuation per pupil for districts with enrollments of less than 4,000.

4. Assessed valuation per pupil and median family income were not related.

5. Taxpayer effort, the ratio of local property taxes paid for school operation to median family income, was not related to the assessed valuation per pupil when extraneous sources of revenue were controlled.

6. Taxpayer effort (income) was strongly related to the desired educational expenditure millage (DEEM) when extraneous sources of revenue were controlled.

7. The mean level of the effort (income) necessary to reach the group mean expenditure level was not significantly changed by the application of the four formulas.

8. The variance of the effort (income) necessary to reach the group mean expenditure level was not significantly changed by the application of the four formulas.

9. Family income and effort (income) were significantly related. This relationship, however, was somewhat weaker with the 1968-69 formula.

The Equal Opportunity Principle

1. The assessed valuation per pupil for a school district was significantly and positively related to a district's expenditure level for districts below 2,000 enrollment. This condition developed because of the wide variations in ability (assessed valuation per pupil) found in the small school districts.

2. The expenditure level of a school district was not related to median family income.

3. When extraneous funds were controlled, taxpayer effort (income)

had a significant relationship with a district's expenditure level.

4. Progress in school district reorganization has been slow during the past two decades. This condition may be attributed to the high adequacy index for the smaller school districts under the 1963-64 formula.

5. The level of the adequacy index increased in districts with enrollments ranging from 1,000 to 20,000 and decreased in districts below 1,000 under the 1968-69 formula.

6. The variance of the adequacy index was found to be significantly smaller for all districts under the 1968-69 formula.

7. In comparison with other states, Washington ranked high in some demographic factors that tend to denote equality of education. The relevant factors were: lowest percentage of selective service draftees failing the pre-induction mental tests in 1964, fifth highest percent of public high-school graduates in 1964-65 as percent of ninth-grade enrollment in 1961-62, fourth lowest percent of population 14 years and older illiterate in 1960, and second highest in terms of median years of school completed by people 25 years old and older. The range of the educational attainment of people 25 years old and older between districts in the 66-district sample, however, was in excess of the range among the 50 states.

The Efficiency Principle

1. Progress in reorganization of school districts has been slow during the last 20 years. Reorganization into larger units would distribute the taxable wealth more equitably.

2. Application of the 1968 formula resulted in the mean level of the district guaranteed revenue changing significantly for all groups except the four largest districts. Districts with enrollments of 2,000 to 20,000 and districts below 1,000 decreased. This finding was indicative of a redistribution of funds from the smaller districts to the larger districts.

3. With use of the 1968-69 formula the variance of the district guaranteed revenue was significantly reduced. Wide variations can lead to inefficient use of total resources.

4. Three types of negative equalization funds were distributed to school districts during 1963-64. Flat grant funds totalling $1,277,704 were distributed to 59 small districts without regard to their need. Negative equalization funds were distributed to school districts located in counties that maintained low property assessment ratios. If the ratios were established at 25 percent of "true and fair value" as in the 1968-69 formula, the savings, $9,769,381, could have been redistributed to raise the guaranteed revenue level of all school districts. An additional $5,372,021 would have been available under the 1968-69 formula when federal forest and Public Law 874 funds were treated as "in lieu" of local property taxes.

5. The 1968-69 formula permitted school districts more latitude in determining how fiscal resources were to be utilized.

The Experimentation Principle

1. Under the 1968-69 formula, the mean percentage of leeway funds available to districts was significantly smaller in districts with enrollments ranging from 300 to 8,000 and significantly larger in districts with fewer than 100 students.

2. Under the 1968-69 formula, the variance in percentage of leeway funds was significantly larger for districts with enrollments below 300 and

smaller for districts with enrollments ranging from 300 to 20,000.

3. The mean millage necessary to produce $50/EM was significantly smaller for districts below 100 when the 1968-69 formula was used. No change occurred in the remaining districts.

4. More flexibility in the use of funds was provided in the new formula.

5. The distribution formulas under investigation did not recognize the "reward for effort" concept.

Recommendations

The following recommendations were offered to correct deficiencies remaining in the "new" formula:

1. The foundation level of state support is inadequate. Many districts find it necessary to seek additional local resources. This action creates extreme inequities among the taxpayers of the various school districts of the state.

2. More resources must be allocated to public education. Studies show that education is a good investment as measured by rate of return, contribution of education to our Gross National Product, and total lifetime earnings.

3. Washington's laws pertaining to property assessment need revision. Initial investigation indicates that states with a productive property tax have an intensive property tax appraisal system.

4. The use of property valuation as an index of taxpaying ability is invalid. Personal income tax paid is the most adequate of present available measures of wealth. Since no other measure is available in Washington, consideration should be given to granting all school districts a "guaranteed valuation." The state would then supplement the local property tax to produce a guaranteed yield for each school district.

5. Since quality of education is highly correlated with both size and expenditure level, reorganization of school districts is essential in satisfying the equal opportunity criterion.

6. The leeway or lighthouse concept prevalent in both new and old formulas should be maintained. Every school district, however, should have an equal opportunity to become a "lighthouse" district. This condition would be satisfied under a plan incorporating the matching levy or "guaranteed valuation" philosophy. The demonstration effect may lead many districts to raise their educational aspirations.

What has happened in the state of Washington during the period the new formula has been in effect?

The new distribution plan has been in effect for more than two years. During that time, reliance on the special millage levy has increased rather sharply. Much of the shift from state to local support can be attributed to the inadequacy of the present foundation level rather than to a desire for expansion of additional services.

Districts with an unusual amount of tax-exempt property are facing financial difficulties because of low assessed valuation and lack of community understanding. (Residents of several heavily endowed PL 874 districts have filed an injunction in order to restore the previous treatment of PL 874 funds. A similar action is being planned for treatment of federal forest funds. Another district has found it necessary to become nonoperative because of its low tax base.)

No substantial changes have been made to modify Washington's property tax assessment practices. Parents, legislators, and educators, however, are more aware of the assessment ratio and how it relates to school finance.

School district consolidation has not accelerated as a result of adoption of a new formula. New secondary accreditation standards coupled with the new formula should stimulate reorganization action.

In this paper, I have attempted to describe how computer simulation can be used to predict the consequences of a change in school fund distribution. The principles that were developed may not be compatible with the objectives of a specific decision-making body. Likewise, the methods that were formulated may or may not be applicable. Decision-making bodies implicitly develop their own principles of fund distribution. They, in turn, can construct appropriate measurement methods. Simulation then can be used to determine whether the proposal under study satisfies their criterion. If not, modification may be made before the plan has been adopted.

The computer simulation used in this particular study appears to have identified most of the deficiencies of the new state distribution plan. Lawmakers of the future may find simulation useful in modifying deficiencies and in allaying the concerns about the possible consequences of the new legislation.

III. The Simulated Effects of Using Alternative Property Tax Bases as State and Local Resources in the Apportionment of State School Aid

James Rose

THE RELATIONSHIPS between property wealth and income measured by units, or aggregates, or percent of state total are of interest in educational finance studies. This interest recognizes the ability-to-pay principle of taxation.

Seemingly of lesser interest in educational finance studies are the relationships between property wealth and the benefits financed by property taxation, in this case, public-school education. However, these relationships, or lack of relationships, are important in a decentralized state public school system where the property tax base represents a major source of public school support, and the state is concerned with the efficient utilization of its scarce tax resources to attain equity in educational opportunity and tax responsibility.

Since different property components possess different characteristics relative to sociological, political, and economic conditions, they possess varying relationships to the existence of pupils, or educational need.

In a state-local public-school finance model, at least three reasons can be said to underlie the importance of studying these relationships:

1. Where the state is concerned with the efficient utilization of its scarce property tax resources, negative, zero, or relatively weak positive relationships between component property wealth and educational need may signify a relative underutilization of the components for tax purposes.
2. Where the state requires viable measures of fiscal capacity and educational need for the prudent distribution of state aid, the relationship possibilities may result in distorted state apportionments which over- or under-compensate local educational units.
3. Local taxation of components unrelated to local educational need would not likely receive strong support from the component taxpayers.

This study examined the relationships between component property wealth, *fiscal capacity*, and educational need, *average daily membership, weighted,*[1] in all 36 Oregon counties as they existed during the 1965-66 school and/or fiscal years. One pur-

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[1] Each pupil, grades 1-8 = 1.0; each pupil, grades 9-12 = 1.3. This followed the Oregon weighting program for measuring local educational need.

pose of the study was to identify and group certain property tax base components according to educational need relationships, or lack of relationships, for introduction into hypothetical state school apportionment formulas as substitute measures of local fiscal ability and/or state resources. A second purpose was to measure the fiscal effects of these substitutions according to state school aid apportionment criteria.

Research Procedures

The assessed valuations of the three major property tax base components —real, personal, and utility properties—and assessed valuations for 47 components and groupings of components [2] were recorded for the 36 Oregon counties. The 47 components, the three major components, and total property wealth represented 51 different possible measures of county fiscal capacity. Subsequently, a computer program was written to equalize these valuations to total true cash value and to check the internal consistency of these data.

County population and county average daily membership,[3] weighted, represented two measures of educational need. As subsequent examination revealed a significant positive relationship between population and pupils, population was dropped from further consideration.

Correlation Analyses

Zero-order correlations [4] were tested at the .01 level of confidence, and the correlations were described by use of E, Index of Forecasting Efficiency.[5]

Simulation of State School Aid Distributions

A hypothetical apportionment formula resembling the existing Oregon formula was designed.[6] The formula can be stated as:

$$\text{F.P.} = \text{L.C.} + \text{F.G.} + \text{P.F.G.} + \text{EQUA}$$

Where:

(Constant) F.P. = Foundation program level of $600 per ADMw.

(Constant) L.C. = Local contribution rate, (computational) Mathematically determined by:

$$\text{L.C.} = \frac{.50 \times (\Sigma\ \text{ADMw} \times \$600)}{\Sigma\ \text{total true cash value}}$$

(For this study a constant 10.88 mills)

(Variable) F.G. = Flat grant from State General Fund appropriation. The rate of state support was set at a constant 50%. Three variable flat grant amounts and/or rates were used: 0%, or $0.00 (complete equalization) 80%, or $240, 100%, or $300 (no special purpose equalization).

(Variable) P.F.G. = State property tax flat grants. Where property tax base components were redefined as a state resource, the proceeds of a uniform state millage levy of 10.88 mills were distributed as flat grants.

$$\text{P.F.G. per ADMw} = \frac{10.88 \text{ mills} \times \text{State property true cash value}}{\Sigma\ \text{ADMw}}$$

(Variable) EQUA = State special purpose equalization grants. Any positive remainder was special purpose equalization aid. Negative scores were transformed to zero. The negative scores, or "negative equalization" were summed and used as an apportionment criterion measurement.

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[2] From Oregon State Tax Commission.

[3] From Oregon State Department of Education.

[4] Pearson product-moment coefficients of correlation.

[5] $E = 100\ (1 - \sqrt{1 - r^2})$.

[6] No local correction factor was included.

Apportionment Criteria

Apportionment criteria were derived from state school aid purposes. For the criteria and measurement data developed by Farner, see pages 122-23.

Computer Programming

Zero-order correlations, means, and standard deviations were computed on an IBM 1620 computer, using an existing library statistical subroutine program.[7]

A program was designed for the IBM 360-50 computer to perform county distributions and compute measurements for each alternative distribution.

The Findings

The three major component property and total property true cash value showed a significant positive relationship to pupil membership. In addition, the five variables were highly intercorrelated. The zero-order correlations and variable intercorrelations are shown in Table 1.

According to these zero-order relationships, the major components were ranked in the following order: real, personal, and utility property wealth. The correlations were dramatized by use of E scores to show the relative differences between and among pairs of correlations. These data are shown below:

Variables	Forecasting efficiency scores (E)
Real property	97.6%
Personal property	71.7
Utility property	54.1
Total	87.4

Of the 51 fiscal capacity measures studied, 10 were unrelated to educational need. The remaining 41 zero-order correlations ranged from +.417 through +.996. The distribution of these correlations and commensurate forecasting efficiency scores are shown in Table 2.

Of the 51 fiscal capacity measures, 23 were combinations of sub-components, and 28 were separate and discrete measures. Of these 28 discrete measures, seven were unrelated to educational need. These seven were mostly sub-components of the personal property component. Of the 21 related measures, eight with educational need correlations of .900 or greater were classified as "highly related." The 15 unrelated and highly related measures are identified in Table 3.

On the basis of other factors, such as the traditional state function of assessing utility properties, and the diminishing value of the personal property tax, two alternative state-local property tax bases were identified:

Alternative 1. A local base comprised of the major property component, *real property,* and a state property tax base comprised of the remaining state total property wealth

Alternative 2. The status quo, a local base comprised of the sum of real, personal, and utility property wealth and a zero value state property base.

As shown in Table 4, alternative No. 1 produced criteria measurement scores in the desired direction under the three specified state flat grant-equalization ratios.

Conclusions

Fiscal capacity and educational need variations among school districts within counties are probably equal to

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[7] UO-0026, University of Oregon Statistical and Computation Center.

TABLE 1.—ZERO-ORDER CORRELATIONS BETWEEN FOUR FISCAL CAPACITY MEASURES AND EDUCATIONAL NEED IN 36 OREGON COUNTIES, 1965-66

N=36

Variables	X34	X18	X2	XT
X_1 ADMw	.996*	.959*	.894	.992*
X_{34} Real property		.971	.902	.997
X_{18} Personal property			.899	.980
X_2 Utility property				.924
XT Total property				

* Significant at the .01 level of confidence.

TABLE 2.—DISTRIBUTION OF FIFTY-ONE ZERO-ORDER COUNTY FISCAL CAPACITY AND EDUCATIONAL NEED CORRELATIONS ACCORDING TO r AND E SCORES

N=36

Frequency	10	1	1	4	3	5	27	M = 51
r Range	+000 −.417	.418 .499	.500 .599	.600 .699	.700 .799	.800 .899	.900 .996	
E Range	0-9%	10-13%	14-19%	20-29%	30-39%	40-55%	56-98%	

TABLE 3.—FIFTEEN PROPERTY WEALTH MEASURES UNRELATED AND HIGHLY RELATED TO EDUCATIONAL NEED IN OREGON COUNTIES

N=36

UNRELATED Sub-component measure	r	HIGHLY RELATED Sub-component measure	r
X_{21} Farm Machinery (Pers)	.195	X_{10} Telegraph (Util)	.902
X_{22} Horses (Pers)	−.159	X_{11} Telephone (Util)	.973
X_{24} Swine (Pers)	.219	X_{19} Merchandise (Pers)	.967
X_{25} Cattle (Pers)	−.168	X_{20} Furniture (Pers)	.969
X_{26} Misc. Livestk (Pers)	.083	X_{23} Misc. Machine (Pers)	.911
X_{29} Timber (Real)	.232	X_{35} Land Inside Corp. Limits (Real)	.969
X_{27} Poultry (Pers)	.325	X_{36} Improvements Inside Corp. Limits (Real)	.967
		X_{38} Improvements Outside Corp. Limits (Real)	.950

TABLE 4.—STATE SCHOOL AID APPORTIONMENT CRITERIA SCORES DERIVED FROM THREE ALTERNATIVE DISTRIBUTION PLANS WITH TWO ALTERNATIVE LOCAL PROPERTY TAX BASES OREGON COUNTIES, 1965-66, N=36

Apportionment measurement	Local base = Real Alternative 1			Local base = Total Alternative 2		
	Distribution ratios			Distribution ratios		
	0% (F.G.)	80-20% (F.G.-Equa)	100% (F.G.)	0% (F.G.)	80-20% (F.G.-Equa)	100% (F.G.)
1. Standard deviation of mean local millage levies	.18	1.49	2.58	.70	1.88	2.99
2. Mean local millage levy....	10.83	10.32	10.44	10.65	9.98	10.20
3. Percent negative equalization	0.1%	0.9%	3.6%	0.5%	2.3%	7.0%
4. State aid required (millions)	$140	$141	$140	$141	$143	$140

or greater than variations among counties. The conclusions drawn from these study findings are qualified accordingly. Further study of this problem by use of different criteria, different apportionment formulas, and different types of fiscal capacity-educational need data and measurements, is needed.

From these findings in this study the following conclusions can be drawn:

1. Property wealth, as an aggregate measure of fiscal capacity is related to educational need, measured by weighted pupil membership. The three major components of wealth, real, personal, and utility, were also related to educational need. Neither the influence of private-and parochial-school pupil membership nor assessment practices which could have influenced these relationships were controlled.

2. Different components and subcomponents possessed different relationships to educational need. According to E scores, the three major components were ranked: real, personal, and utility. Seven out of 28 discrete sub-component measures were unrelated to educational need.

3. Real property wealth as a local base and utility plus personal property wealth as a state property resource in the apportionment formulas used best satisfied the apportionment criteria. This was true under three state flat grant-equalization ratios ranging from no flat grants to total flat grants.

When the status quo (local property base=total property wealth) total flat grants were made, state aid requirements did not vary; however, the spread of local millage levies widened and negative equalization increased. When a 20 percent state equalization aid distribution was made, state aid requirements increased, but millage levy spread and negative equalization decreased. This was interpreted to mean that in the first case the relative underutilization of component property wealth in some counties was subsidized by relative overutilization in other counties. In the second case, state equalization aid became a subsidy for underutilized component wealth.

IV. Simulated Effects of a Total Property Tax Adjustment in a Foundation Program Formula

Robert R. Rath

THE PURPOSES OF this study were threefold: (a) to analyze tax rate data for level of school, non-school, and total millages in school districts in Oregon during the 1963-64 fiscal year; (b) to analyze relationships between school and nonschool millages in classifications of school districts; and (c) to simulate and analyze a total tax adjustment to the apportionment formula for distribution of state funds for the foundation program. The simulated effects of the total tax adjustment to the apportionment formula are the major focus of this paper.

Five sections are included: (a) a brief introduction about the Oregon scene, (b) development of a total tax adjustment, (c) development of a total tax adjustment to the formula for distribution of state foundation program funds, (d) effects of the simulation according to criteria, and (e) implications.

The Oregon Scene

School districts in Oregon are thought to be fiscally independent of other local governmental units. The budgeting and taxing authority of school districts is not under the direct control of cities, counties, or any other local government branch. However, the taxing authority of school districts and other local governmental units may be related in at least two ways: (a) There is a high degree of citizen participation in the establishment of fiscal policies through budget committees and frequent elections on fiscal matters. (b) Both school and nonschool property tax millages are levied on the same local base of taxation—the assessed value of property. Thus, although there is no direct fiscal control between or among local governments (both school and non-school), there may be some effective coordination through the decisions of budget committees and the electorate in local governmental units.

If effective coordination were found, different *levels* of millages as well as different *relationships* between school and nonschool millages might be expected among school district areas. Different levels and relationships between school and nonschool millages would be important for local and state governments. At the local level, the major source of financing is the property tax complicated by attendant problems of rising costs, growth, population shifting, and the trend of increased demand for tax revenues by

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the state and federal governments. At the state level, the major portion of the tax dollar is apportioned to school districts for the purpose of equalizing educational opportunity and/or property tax relief.

This study concerned 442 school districts for the school year 1963-64. Millages were based upon true cash value. School millages included the County School Fund, the Intermediate Educational District, the school district(s), and the community college where applicable. Nonschool millages included levies for city, county general fund, water, water control, cemetery, hospital, fire, lighting, and port districts. There were 2,461 tax code areas.

A Total Tax Adjustment

The rationale for using a total tax adjustment in the school apportionment formula was based upon hypotheses of relationships between school and nonschool millages in school district areas. The levels of school, nonschool, and total millages were 13.5 (±3.7), 3.9 (±1.9), and 17.4 (±4.3) mills, respectively. The correlation between school and nonschool millages for the 442 school districts was .10. These data would not support a rationale for using a total tax adjustment in the state apportionment formula.

However, when the 442 school district millage rates were examined in a series of categories, there was considerable variation in the correlations, ranging from .295 to −.218. With this minimal justification, the total tax adjustment was simulated.[1]

An Adjusted Apportionment Formula

The adjustment of the 1963-64 Oregon apportionment formula to school districts was made in only one factor, the local contribution millage rate. The local contribution millage was adjusted as a function of total millage level (school and nonschool) in each district. All factors were held constant, including the total amount of state funds, except the balancing figure of equalization.

The formula used to distribute state foundation program funds to Oregon school districts in 1963-64 was:

$$\begin{matrix}\text{Foundation}\\ \text{program}\end{matrix} = \begin{matrix}\text{flat}\\ \text{grant}\end{matrix} + \left(\begin{matrix}\text{local}\\ \text{contribution}\\ \times\ \text{TCV millage}\end{matrix}\right) + \begin{matrix}\text{local}\\ \text{contribution}\\ \text{correction}\end{matrix} + \text{equalization}$$

Where:

Foundation program = $338/ADMw
Flat grant = 108.58/ADMw
TCV = True cash value
Local contribution millage = 8.62 mills
Local contribution correction = Nonproperty tax receipts adjustment
Equalization = Any positive remainder, with negative figures transformed to zero

The contribution millage was adjusted by district total millage as it deviated from the state average total millage:

$$\begin{matrix}\text{Adjusted}\\ \text{contribution}\\ \text{millage}\end{matrix} = \begin{matrix}\text{local}\\ \text{contribution}\\ \text{millage}\end{matrix} \times \left[1.00 + \left[1.00 - \left(\frac{\text{district total millage}}{\text{state average millage}}\right)\right]\right]$$

The effect of the adjustment can be seen in three hypothetical cases:

With:

State average total millage = 20.00 mills
Local contribution millage = 8.62

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[1] In wealth quintiles, there was a high positive correlation in the wealthiest districts (+.295) which became increasingly negative as wealth decreased to the high negative correlation in the low-middle wealth category (−.218).

Then:

Level of district total millage	Adjusted contribution millage	Local contribution millage	Millage correction
25.00 (High)	6.47	8.62	− 2.15
20.00 (Ave.)	8.62	8.62	0.00
15.00 (Low)	10.77	8.62	+ 2.15

The adjusted contribution millage was *increased* for school districts with *less* than the state average total millage and was *decreased* for school districts with *more* than the state average.

Effects of Simulated Total Tax Adjustment

The effects of the total tax adjustment to the state apportionment formula were simulated for the state of Oregon, each school district in Oregon, and several categories of school districts. For purposes of this report, two analyses will be presented: (a) effects for the state as a whole, and (b) effects for school districts grouped in change-in-equalization per average daily membership (weighted) categories.

The operation of the total tax adjustment in the foundation program formula resulted in three changes: (a) a change in millage to reach the current expenditure per pupil, (b) a commensurate change in the total millage, and (c) a change in equalization per pupil. While other categories of school districts and other simulations were done in the original study, they are not reported here.

State-Wide Evaluation by Criteria

The state-wide effects in terms of the established criteria are described below:

Criterion 1—The ranges of millages (standard deviation) for school and total millages decreased considerably. The standard deviation of the school millages decreased from 3.7 to 2.3 mills, and the standard deviation of total millages, from 4.3 to 2.4 mills. The standard deviation did not change.

Criterion 2—School and total mean millages increased. Mean school millages increased from 13.5 mills to 15.0 mills. The same increase was reflected in the mean total millage, while nonschool millages remained static.

Criterion 3—Negative equalization was not computed for this study.

TABLE 1.—EFFECTS OF TOTAL TAX ADJUSTMENT IN CHANGE-IN-EQUALIZATION/ADMw CATEGORIES

Item	Change-in-equalization categories				
	Positive changes	0.00 to —$20	—$20 to —$40	—$40 or more	Unaffected
Number of districts	61	81	58	35	207
Mean changes in equalization/ ADMw	$20.00	—$10.51	—$30.22	—$49.85	0.00
RANGES OF MILLAGES (standard deviation)					
School	2.6	2.2	2.2	2.1	3.3
Nonschool	2.3	1.8	1.5	1.0	1.6
Total	2.3	2.3	1.7	2.5	3.4
MEAN MILLAGES					
School	18.5	15.1	13.4	11.5	11.8
Nonschool	6.1	4.1	3.7	2.8	3.4
Total	24.6	19.1	17.1	14.3	15.3
Change in total	—1.8	.6	1.6	2.8	2.4

Criterion 4—The amount of state funds was held constant in the simulation.

Criterion 5—The adequacy of the foundation program was held constant.

The impact of the evaluation of the simulated total tax adjustment in the foundation program was that the average millage rate (both school and total) increased. However, there was a considerable decrease in variation of school and total millages for school districts in Oregon.

Effects in Change-in-Equalization Categories

School Districts were grouped according to change-in-equalization per pupil as shown in Table 1. Five change groups were identified: positive, negative (including three groups with different degrees of negative change), and unaffected. The following statements summarize the data in Table 1:

1. Many districts (207) were unaffected by the total tax adjustment in the formula. They tended to be similar in having (a) large increases in theoretical millages, (b) nonunified district organization, and (c) low urbanization.
2. Proportionately, more unified and highly urbanized districts than other subgroups received positive changes in equalization.
3. Ranges of millages (standard deviation) were reduced for school and total millages in the categories where change was effected.
4. Mean millages remained consistently higher in the positive change categories than in negative change categories and the unaffected categories. This was consistent for school, nonschool, and total millages.
5. Changes in total millages ranged from a reduction of 1.8 mills in the positive change category to an increase of 2.8 mills in the greatest negative change category. The total tax adjustment reduced total millages and increased equalization per pupil in only 61 of the 442 districts.

The impact of this analysis is that the total tax adjustment as computed tended to adjust millage rates at the two extremes—very high and very low. About half of the school districts were unaffected by the adjustment. In these terms, the total tax adjustment could be viewed as inadequate in leveling millage rates.

Implications

The data for this study were collected for one year. An annual collection of millage rates for school and nonschool purposes might indicate patterns or trends of millages which may be different from those found in this study. A continuing study of millages seems particularly pertinent to the problem of intergovernmental relationships, attitudes of taxpayers to high property tax levels, allocation of additional state funds as property tax relief, and the influx of additional funds from federal sources.

At least four major pertinent variables were not included in this study because of inaccessibility to information or measurement: (a) Income data may be a better index of ability to pay than the foundation program formulas relying on assessments and millages. (b) Nonproperty tax and nontax revenues vary considerably for school districts and nongovernmental agencies with user charges, services rendered, and so forth, which would have a direct effect upon millage rates. (c) Capital financing programs vary for school and nonschool units; this would have a differential effect upon millage rates. (d) Communities probably differ considerably in the need for government services, in the cost of providing similar services, and the desires for different levels or kinds of services; this would have a direct effect upon millages.

This study simulated an adjustment to the apportionment formula in only one manner—through a total tax adjustment. Other proposals have been made, and pilot studies which focus at the same problem have been carried out. Examination of the similarity and differences between the proposals for the same school districts in the same period of time would abet the decision-making process for the adoption, adaption, or rejection of proposals. Computer technology permits the relatively efficient simulation of these kinds of studies.

The basic issue in this study was the definition of the intergovernmental relationships in the local community and with the state and federal governments. Two general positions could be taken at the local level: (a) The community and its property tax rates may be considered to include all school and nonschool governmental services. (b) The school may be considered as a separate entity from other property taxing units. This study examined the existing millage levels as representing the relationship between local governmental units. An analysis of the attitudes and activities between local governmental units would be desirable at the local level.

Trends and Issues in School Finance

S. Kern Alexander

DURING THE PAST DECADE education has been brought to the forefront as the prime mover of social change in the United States. Mountains of statistics have been produced which substantiate the proposition that education is an investment in people. Politicians and economists have come to realize that a dollar invested in the educational enterprise quickly enters the blood stream of the national economy, increases the gross national product, and, theoretically, in the long run produces a better and higher standard of living for all Americans. The commitment to steady economic growth coupled with full employment and maximum utilization of our physical resources casts education into the position of greatly increasing its services while attempting to combat the rising costs caused by inflation and increasing enrollments.

Placed in this position, educators must seek new and increased resources to support education while improving their methods and procedures for handling the revenues produced. In our diversified society the changes, of course, do not come at once, and least of all, they do not appear in any orderly fashion. Nevertheless, it is evident that during the past decade tremendous changes have taken place in the financing of education. A look at the total expenditures for public elementary and secondary education since 1957-58 suggests great innovation, at least as far as dollar amounts are concerned. Total expenditures have increased 108.9 percent, from $13,569,163,000 in 1957-58 to $28,352,330,000 in 1966-67. This kind of increase in expenditures does not come about by "natural selection"; it must be planned, promoted, and lobbied for year in and year out.

With the critical needs and additional responsibilities of education, it is inevitable that new and better methods and procedures for financing education will result. This paper will attempt to identify some of the changes which have developed and thereby provide some predictions.

To look at the trends and issues in school finance, it is important that we do not confine ourselves to one segment of school finance. Therefore, I shall discuss not only state finance, but also some of the trends in federal financing of public elementary and secondary education.

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State School Finance

In 1966-67, the state-local contribution for public elementary and secondary education accounted for 92.1 percent of the total revenues. With the apparent stabilization of the federal commitment during the past year, the state-local percentage is due to increase for the 1967-68 school year.[1]

These data, of course, show only that state and local resources are still footing most of the bill for public elementary and secondary education in the United States. A closer look reveals that not only are the states putting forth larger sums of money, but they are also steadily increasing their fiscal effort. The ratio of state-local revenues for education to total personal income has increased from 3.3 percent in 1957-58 to 4.7 percent in 1966-67.

The additional fiscal effort by the states is not confined to education. Heller points out that state-local governments have made "remarkable fiscal efforts" during the past decade. State tax rates have greatly increased since World War II. In 1946, state-local taxes made up 5.4 percent of the GNP and in 1964, they had risen to 8.0 percent.[2] During the decade from 1957 through 1966, state tax revenues increased from $85.72 to $150.60 per capita and have increased from $41.92 to $55.51 per $1,000 of personal income.[3]

States are obviously responding well to the growing demands of all governmental needs as well as to the growing social and economic demands on the educational system. This does not mean that we have reached the zenith of educational attainment; it probably does not mean that we are even adequately financing education; it simply means that states are responding to the challenge and probably will continue to do so.

The appropriate question then is, What are the states doing to meet this challenge and how are they doing it?

State Distributions

From 1957-58 through 1966-67, state legislative appropriations for elementary and secondary education more than doubled, increasing 113 percent from $4.5 billion to $9.6 billion. This increase in the amount of money was accomplished without a great proliferation in the total number of state funds. The number of such distributions increased from 389 to 441, an increase of only 13 percent. The numbers of these funds range from one in Hawaii to 21 in California.

Equalization—If there is one overriding trend apparent among state legislatures, it is the tendency to award state grants on an *equalization basis.* In 1966-67, over 69 percent of all state school funds were distributed in this manner.

Total equalizing distributions amounted to $6.7 billion, an increase of approximately $4.1 billion over 1957-58. Of this total, over $6.2 billion was distributed through nonrestrictive general-purpose grants with the remainder being distributed through special-purpose equalizing grants.

Measures of wealth and the ability of school districts to pay for an education program are still determined largely by the valuation of property in the school districts. Although a few states, such as Maryland, Iowa, and some of the Southeastern states, have begun to rely on indexes of taxpaying ability, there seems to be no great trend in this direction. This is probably because property is the primary source of local school revenue and little reason exists to determine wealth by a measure which cannot be taxed. Also, most states have not developed and established the machinery to ascertain the relative personal income figures which definitely would assist in determining wealth. Another reason, which is not so readily apparent, is that the newly reapportioned legislatures are not encouraging the use of the new sources, such as utility taxes, occupational taxes, and sales taxes in determination of local effort. Local taxes of this type accrue largely to the benefit of urban, suburban, and the market places of the states. The inclusion of such taxes in the determination of local ability would generally reduce the state equalization allotment to these popular trading centers. With the increased enforcement of the one-man one-vote doctrine in the legislatures of the states, it is doubtful that under the traditional foundation program approach, any great movement toward the utilization of taxes other than property as measures of ability and local effort will develop in the near future.

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[1] National Education Association, Research Division. *Estimates of School Statistics, 1967-68.* Research Report 1967-R19. Washington, D.C.: the Association, 1967. p. 17.

[2] Heller, Walter W., *New Dimensions of Political Economy.* Cambridge, Mass.: Harvard University Press, 1966. p. 130.

[3] National Education Association, Committee on Educational Finance. *State Taxes in 1966.* CEF Report No. 14. Washington, D.C.: the Association, May 1967. p. 1.

General-purpose distributions—The great bulk of state school funds is distributed to local school districts

TABLE 1.—NUMBER AND AMOUNT OF STATE FUND DISTRIBUTIONS BY PURPOSE AND METHOD, 1953-54 through 1966-67 *

State funds	Number of funds			Amount		
	1953-1954	1957-1958	1966-1967	1953-54	1957-58	1966-67
Total distributions	375	389	441	$2,953,027,782	$4,480,329,476	$9,645,165,971
Flat	285	292	354	1,545,314,712	1,855,564,599	2,970,141,066
Equalizing	90	97	87	1,407,713,070	2,624,764,877	6,675,024,905
General-purpose distributions	113	105	107	2,392,312,862	3,687,571,253	8,174,135,825
Flat	64	56	57	1,169,890,576	1,361,700,569	1,928,130,338
Equalizing	49	49	50	1,222,422,286	2,325,870,684	6,246,005,487
Special-purpose distributions	262	284	334	560,714,920	792,758,223	1,471,030,146
Flat	221	236	297	375,424,136	493,864,030	1,042,010,728
Equalizing	41	48	37	185,290,784	298,894,193	429,019,418

Sources:

Munse, Albert R.; McLoone, Eugene P.; and Hutchins, Clayton D. *Public School Finance Programs of the United States, 1957-58.* U.S. Department of Health, Education, and Welfare, Office of Education, Misc. No. 33. Washington, D. C.: Government Printing Office, 1960. p. 34.

Alexander, S. Kern. Public School Finance Programs, 1966-67, a series of individual state pamphlets published by U.S. Department of Health, Education, and Welfare, Office of Education, 1966 and 1967.

* 48 States in 1953-54 and 1957-58 and 49 states in 1966-67. Hawaii is not included and cannot be classified into the conventional categories used to describe the other state funds. If Hawaii is included, the total funds above for 1966-67 reach $9,730,301,661.

through nonrestrictive grants which can be classified as general purpose. These funds are provided to most school districts with little instruction on use of them, and are typically used for current operation. The proportion of state school support funds classified as general purpose has risen only slightly since 1953-54 when 81 percent of all funds were so classified. Of the $6.7 billion of state school support funds provided in 1966-67, $5.8 billion has been distributed through general-purpose funds.

Interestingly, the numbers of general-purpose funds have remained almost constant since 1953-54, declining from 113 funds to 105 in 1957-58, and increasing slightly to 107 by 1966-67. Of the 107 general-purpose distributions, Colorado and Oregon had the most with five each. The percent of school funds distributed through general-purpose grants varies considerably from state to state. Four states (Idaho, New York, Ohio, and Wyoming) distribute 99 percent or more of their funds through general-purpose grants, while South Carolina distributes none of its funds through general-purpose grants.

Special-purpose distributions—Only about 15 percent of state school moneys can now be classified as special-purpose distributions, and this percentage has been slowly but steadily declining during the past 13 years. In 1953-54, 19 percent of state school funds were so classified and by 1957-58, the total had slipped to 18 percent.

Funds are categorized as special-purpose when strong restrictions are placed on their use or on district participation. Transportation, special education, and construction funds are examples of special-purpose funds.

About $1.5 billion was distributed through 334 special-purpose funds in 1966-67. Since 1953-54, 72 funds of this type have been added by the states. At present, 76 percent of the total number of state school funds can be classified as special-purpose, even though these provide a distribution vehicle for only 15 percent of state school moneys.

California, South Carolina, and Virginia lead in numbers of special-purpose funds, each with 18. Wyoming has no special-purpose funds; six states have only one each. Of course, in many states, special-purpose funds have been incorporated into foundation programs.

Incentive plans—As state financing of education has increased, many states have been faced with the task of encouraging local school districts to keep pace in financing of the schools. To accomplish this purpose, some states have enacted incentive plans and others are proposing them. The incentive concept is not a new idea and has been used extensively in some states as well as by the federal government. Incentive plans generally may be classified in two categories: (a) rewards for raising local effort and supporting the educational program, and (b) rewards for performing specific tasks desired by the legislature but not necessarily related to increased fiscal effort.

It is true that the state aid formulas of New York and Rhode Island may be considered incentive programs, but traditionally the incentive approach was used to accomplish desired goals set by the legislature or for reasons other than increasing fiscal effort. The major source of state assistance in Wisconsin provides for additional funds for "integrated" or quality educational programs. In Wisconsin the incentive seems to have produced the desired results since less than 10 percent of the school districts are now classified as having only a "basic" program. Maine, as have other states, has provided incentive funds to encourage school district reorganization. New Mexico has used the incentive method to promote more realistic property valuations.

Currently, legislatures are focusing incentive programs on raising the financial effort of local school districts. Several states have come to realize that their foundation programs are not providing sufficient rewards for local school districts to go over and beyond the "minimum" established by the state. To reward additional initiative above the required local effort to participate in the foundation program, finance experts have proposed incentive programs to supplement foundation program aid. Such programs have been proposed in Kentucky, Florida, North Carolina, and New Mexico. While the New Mexico program was a flat-grant program, the programs proposed in the other states had greater equalization tendencies. Oklahoma, in 1965, provided an incentive grant of $25 per pupil for school districts who levied up to five mills in addition to the required local levy.

Special programs—Although a good basic general aid program will provide sufficient assistance and flexibility for local school districts to identify and provide programs for areas of critical need, certain programs require special consideration. Of the programs receiving the greatest attention are the special education programs for exceptional children and culturally deprived children. The states have long recognized the need for special education programs for exceptional children. In 1957-58, 34 states, provided special-purpose distributions to local districts for exceptional children programs; seven states provided financial assistance for exceptional children through general purpose of foundation program distributions. Only seven states did not make any specific arrangements for additional financial cost for exceptional children. During the decade two additional states, North Carolina and South Carolina, began making provisions for exceptional children while several other states established more than one fund for exceptional children. The total number of special-purpose flat grant distributions for special education increased from 34 to 54 in the 10 years.

Because of the comparatively recent identification and focus on the problem of cultural deprivation, in 1966-67 only 16 states had developed additional assistance programs for "compensatory education."[4]

While a few school finance experts advocate permitting federal programs to concentrate on cultural deprivation and devoting state funds to the remainder of the school program, evidence indicates that states are beginning to make their own provisions for such needs. For example, in 1965-66, California entered the "compensatory education" field and has since greatly increased its funding. Connecticut provided additional assistance for education of disadvantaged children in the amounts of $10 million for 1965-1967 and $12.4 million for 1967-1969. New Jersey has a Large Cities Fund that in 1966-67 provided over $5 million for the six municipal school districts that had a population of over 100,000. The 1967 Ohio legislature provided for $100 per year for each culturally deprived child, the distribution to start on January 1, 1968. Michigan and Nebraska have recently enacted legislation that provides additional support for education programs for culturally deprived children.

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[4] On the assumption that foundation programs are not "compensatory" programs.

State assistance for kindergarten programs is another area in which several changes have taken place very recently. In 1957-58, 22 states provided some assistance for kindergartens and by 1962-63, this number had increased to only 23; but during 1966 and 1967, five new states have enacted legislation providing for state contributions to kindergarten programs: Alaska, Maryland, Kansas, Missouri, and Virginia.

Local School Finance Provisions

Revenues from local sources make up 52.0 percent[5] of the nation's entire effort to support public elementary and secondary education. Even though the percentage of local revenues has decreased in recent years in relation to state and federal revenues for education, the over-all total local support has increased and is now $15.3 billion[6] as compared with $6.8 billion 10 years ago.

Property values—Since property taxation makes up the major portion of revenues from local sources, about 94 percent, some attention should be given to the factors and procedures affecting property taxation.

The method for selecting assessors has changed very little in the past decade. In 1957-58, 18 states appointed assessors and in 1966-67, only 20 states appointed assessors. Many states have separate provisions for the selection of assessors, depending upon whether the jurisdiction is a municipality, a school district, or a county.

A discernible trend exists toward state supervision over property valuations and state determined measures of local wealth. During the past 10 years, at least six states assumed greater state control over the determination of local taxpaying ability; four of these states have assumed the responsibility for determining the ratio of assessed valuations as compared to fair cash value of property while the other two states have employed the use of an index of taxpaying ability to determine wealth.

In 1966-67, 32 states reported that they exercised supervision authority over property assessments as compared to only 20 in 1957-58. A total of 32 states maintained that they had the authority to change assessments. This authority to change assessments, of course, overlaps in many states where procedures provide that both local and state governments can make assessment changes.

Property assessment changes have drawn much attention in New Jersey, Ohio, Florida, and Kentucky, where both the courts and the legislatures have made radical changes. In Kentucky, for example, following a ruling by the Court of Appeals requiring all property to be assessed at 100 percent of its fair cash value, all property in the state was reassessed and the mandate of the court was met. The legislature in this case rolled back tax rates to compensate for the increased assessments.

Developments in the 1967 legislatures of Nevada, New Mexico, and Oklahoma indicate that progressive steps are being taken in regard to property taxation. In Nevada, the legislature provided for tightening property assessment procedures which should produce an additional $12 million for the public schools. The New Mexico legislature enacted a mandatory program for appraisal of property for assessment purposes beginning January 1, 1968. In Oklahoma, Senate Bill 141 provided for a complete reappraisal of all taxable real property in each county, to be completed by 1972. This law requires a physical inspection of property with reappraisals to be made every five years.

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[5] National Education Association, Research Division, *op. cit.*, p. 33. (The 52 percent includes local and other revenue receipts.)

[6] *Ibid.*

Such legislative enactments are not new, but there does seem to be a recent intensity of interest in property tax procedures which doubtlessly will serve to improve this source of revenue. These changes usually result in somewhat more revenue for the schools as well as a more equitable tax base for the taxpayer.

Federal School Aid

Throughout our history the federal government, has had an active interest in the financing of education. From the land grants of 1785 to the Elementary and Secondary Education Act of 1965, the federal government has contributed to the support of public elementary and secondary education. The largest and most recent of these assistance programs was, of course, the Elementary and Secondary Education Act of 1965. This Act provided for large special-purpose subventions geared to provide greater educational opportunity for culturally deprived children.

Largely because of ESEA, the federal contribution for elementary and secondary education has increased from 4.0 percent of the total revenues for elementary and secondary education in 1957-58 to 7.9 percent in 1966-67. This 7.9 percent represents approximately $2.2 billion. I say approximately because this amount is spread over at least 25 special-purpose restrictive or categorical distributions, the benefits of which accrue primarily to the advantage of elementary- and secondary-school children. Estimates ranged as high as 80 as to the number of federal programs that assist all levels of education, including preschool, elementary, secondary, vocational education, and higher education. Charles Schultze, formerly Director of the Budget, pointed out in 1966 the difficulties in coordination among federal, state and local governments resulting from the proliferation [7] of federal grant programs not only in education, but in all areas.

Because of the rapid increase in the number of federal grants and the accompanying administrative problems, the present mode of federal assistance has been strongly and seriously questioned in recent years.

Equalization—In analyzing the federal categorical grants, the procedures for distribution and the expenditure restrictions are of primary importance. The procedures for distribution among the states is a subject of great controversy when any grant legislation is devised. The various states advocate distribution measures designed to meet their individual educational needs best. While some factors and variables may benefit one state more than another, it is generally conceded that factors that equalize educational opportunity among the states should be included. Equalization here means statutory recognition of underlying differences in states' relative capacities to support a desirable education program. Prior to World War II, the bulk of federal aid funds was distributed to the wealthier states by per-capita grants directly related to the state per-capita income. During the past 20 years, federal programs for all functions have shown tendencies toward greater equalization. According to the Advisory Commission on Intergovernmental Relations in a 1964 report, there now appears to be an inverse relationship between per-capita income and the federal funds distributed.[8] In other words, the poorer states are now receiving greater shares of federal grants per capita than are the wealthier states.

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[7] Charles L. Schultze, Hearings before the Subcommittee on Intergovernmental Relations of the Committee on Government Operations, U.S. Senate, 89th Congress, 2nd Session, Part I, p. 390-91.

In a more recent study [9] concerning education grants only, the conclusion of the Advisory Commission was reinforced. In this study, seven federal elementary and secondary distributions were selected to measure the equalization tendencies of federal funds among the states. These funds represented nearly $2 billion for the 1966-67 school year. The distributions selected were Titles I, II, and III of ESEA; Titles III and V-A, NDEA; P.L. 874; and vocational education funds. The vocational funds represented approximately 80 percent of the funds distributed under the Smith-Hughes Act, the George-Barden and Supplemental Acts, and the Vocational Education Act of 1963.

The formula allocation for each one of these funds was compared with the wealth of the state by using personal income per pupil age 5-17 as a measure. Use of the Spearman Rank Order method, found that all seven funds together showed an inverse correlation of −.653. Since a decline in wealth should be matched by a corresponding increase in funds per pupil for equalization to exist, the −.653 inverse correlation indicated a moderate equalization tendency. Specifically, the program that provided the least equalization and actually provided for the rich to get richer was Title II of ESEA which had a coefficient of +.47. Programs which had no equalization tendencies were Title III, ESEA, and P.L. 874. It should be pointed out, though, that these programs were not designed to equalize. Whether they should have been so designed is another question.

The fund that provided for the greatest equalization was Title III of NDEA. This program provides for the allocation of funds based on the personal income per school-age child. The correlation coefficient derived was −.958 which meant almost perfect equalization, according to our measure of equalization. This, incidentally, is the same formula as was provided in the Quie Amendment to the general aid bill.[10] The vocational funds provided for substantial equalization (−.723) and Title V, NDEA, provided for slight equalization (−.422). Title I, ESEA, the largest of the funds, indicated definite equalization traits (−.64). With the new 1967 amendments for Title I providing allocations to poor states based on the national average per-pupil expenditure, Title I will show a substantial increase in equalization among states for the 1967-68 school year.

It appears, especially in light of Congressional action in 1967, that federal programs will continue and possibly increase the emphasis toward utilization of relative fiscal capacity measures among the states.

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[8] Advisory Commission on Intergovernmental Relations. *The Role of Equalization in Federal Grants.* A-19. Washington, D.C.: the Commission, January 1964. p. 48.

[9] Alexander, S. Kern, and Johns, Thomas L. *Extent of Equalization in Federal Grant Programs,* unpublished portion of report for Title V, Advisory Council on State Departments of Education, November 1967.

[10] *Congressional Record,* May 23, 1967, p. H5961-63.

General aid—Since 1965, concern over the proliferation of federal special-purpose grants has manifested itself in mounting sentiment for some type of general aid legislation. Critics of the categorical grants cite cumbersome regulations, duplication, lack of coordination and planning, crises orientation, and uncertain funding as the primary problems involved in categorical aid. The Office of Education has steadfastly supported the categorical aid approach, claiming that national problems can best be met by direct assistance through special-purpose subventions. Nevertheless, the criticism of pyramiding red tape continues. The general aid or block grant proposals in 1967 drew support from educators and Congressmen alike, and widespread interest continues to exist in block grants, revenue sharing, and tax credit proposals. The Office of Education has responded recently with an attempt to "package" certain categorical grants in an effort to consolidate the application and accounting requirements. During the next Congress, proponents of the so-called Quie Amendment will undoubtedly introduce measures to merge categorical grants into general or block grants again. In addition to these possibilities, increased discussion of the Heller revenue-sharing proposals continued, and modifications have been proposed to produce a more palatable and politically feasible approach.[11]

With these things in mind, it would not be unreasonable to expect a major policy change in support of larger, more general distributions of federal funds.

Such programs would vest more decision-making authority in state and local education officials for meeting locally identified educational needs, while providing supplemental, categorical aid to meet the so-called national educational needs.

Summary

1. State school aid has more than doubled during the past 10 years. This increase has been accomplished without an excessive increase in the number of state school fund distributions.

2. The largest portion of the new state moneys for education is distributed through general-purpose grants, although there has been practically no increase in the number of general-purpose grant funds. The number of special-purpose distributions has continued to increase, but there has not been a corresponding increase in the amount of money distributed through these funds.

3. There seems to be an increased interest in the use of incentive grants to raise local tax effort. These new plans are designed primarily to supplement existing foundation programs, not to replace them.

4. During the past three years there has been an increased interest in providing state funds for the specific purpose of aiding culturally deprived children. This trend is probably a result of the federal emphasis on compensatory education and is directed primarily toward urban educational problems.

Among other educational activities, kindergarten programs seem to be getting considerable state legislative attention, while programs for the handicapped continue to increase.

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[11] Perloff, Harvey S., and Nathan, Richard P. *Revenue Sharing and the City*. Baltimore, Md.: Johns Hopkins Press, 1968.

5. Several states have made changes and improvements in their property valuation techniques and procedures. More state control over property assessment is being legislated and exercised.

6. Property taxation is by far the greatest resource for local school support, and although there are a few exceptions, fiscal capacity of local school districts is still determined largely from property values.

7. Probably the most important trend yet identified is the increasing emphasis on equalization of educational opportunity by both state and federal programs. A higher percentage of state funds is being allocated through equalization distributions than was 10 years ago. Since World War II all federal grants have shown increasing tendencies toward equalization, and recent analyses indicate that there are substantial equalization traits in the major federal programs for elementary and secondary education.

8. There is much turmoil over the role of the federal government in the financing of education and the relationships with state school systems. Categorical aid has been much criticized and a number of alternatives have been proposed. With the recent discussions concerning packaging, block grants, tax sharing, and tax credits, there may soon be basic philosophic adjustments concerning the coordination of state and federal financing of education.

Consensus, Conflict, and Expenditures for Education

Richard A. Rossmiller, James M. Lipham, and *Russell T. Gregg*

THE QUESTION OF WHETHER the presence in a community of substantial agreement, or conflict, concerning the role of the public schools or of the school board has either favorable or adverse operational consequences has long intrigued the researcher and the practitioner alike. Conventional wisdom has admonished school administrators and school-board members to strive to achieve consensus in the community concerning the role of the schools and of the school board. Implicit in this admonition is the assumption that substantial disagreement is harmful to the schools and that it tends to dampen support for them, particularly with regard to the financial resources made available to the schools by the community. However, the conventional wisdom concerning the desirability of consensus has seldom been put to empirical test.

One aspect of the investigation[1] upon which this paper is based dealt with the relationships existing between (a) consensus within and between the members of four reference groups concerning the role of the schools and of the school board and (b) the financial support enjoyed by the school system. A second aspect of the investigation dealt with the relationship between the effectiveness of a school board in resolving the conflicts which come before it and the financial support accorded the school system.

Two basic hypotheses were tested. The first was that the degree of consensus of expectations within and between various reference groups would be related to (a) change in level of local financial support for the school system and (b) change in the nature of budget allocations by the school system. The second was that the degree to which school boards were able to resolve conflicts in the expectations of various reference groups would be related to (a) change in level of local financial support for the school system and (b) change in the nature of budget allocations by the school system.

Design of the Study

A representative sample of 12 Wisconsin school districts was selected

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[1] Lipham, James M.; Gregg, Russell T.; and Rossmiller, Richard A., *The School Board as an Agency for Resolving Conflict.* U.S. Office of Education, Project No. 2371. Madison: University of Wisconsin, 1967. 183 p.

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from among the 100 Wisconsin 12-grade school districts that enrolled at least 1,400 pupils during the 1963-64 school year. The sample was chosen so that approximately one-third of the districts ranked in the high quarter, one-third in the middle half, and one-third in the low quarter on the criteria of number of pupils in average daily membership, equalized valuation of property per pupil in average daily membership, ratio of nonpublic school enrollment to total district enrollment, and degree of controversy in the school community. Of the 12 districts comprising the sample, five were fiscally dependent and seven were fiscally independent.

Expectations for the School-Board Role

An interview schedule was designed to obtain data concerning the expectations held for the role of the schools and of the school board by the members of four reference groups—citizens, teachers, school-board members, and public officials. The schedule consisted of 138 items which elicited data concerning both the respondent's background and his expectations with regard to the nature and operation of the school board, the educational program of the schools, pupil personnel, staff personnel, finance and business management, and current educational issues. Our experience in developing the interview schedule corroborated Charters'[2] observation that expectations held for the school-board role are so broad at the operational level that the practices which respondents believe should prevail in the schools are indistinguishable from the expectation that school-board members either should employ these practices, or see to it that they are employed.

Data concerning the expectations held for the role of the schools and the school board were obtained from personal interviews with 1,794 citizens, 240 teachers, 183 officials, and 90 school-board members. The citizens who were interviewed were obtained by drawing a random sample of approximately 175 addresses in each district with the help of the University of Wisconsin Survey Research Laboratory. One adult was interviewed at each address by a member of the field staff of the Survey Research Laboratory. A statistical procedure which gave each adult residing at the address an equal chance to be interviewed was used to select the person who would be interviewed at each address. Interviews were obtained with 86 percent of the potential respondents; 10 percent refused to be interviewed, and 4 percent could not be found. Convincing evidence was marshalled to indicate that the sample of 1,794 citizens was indeed representative of the entire adult population of the state of Wisconsin.

A random sample of 20 members of each district's professional staff (excluding the superintendent) was interviewed in each district. A vast majority of the persons included in this sample were classroom teachers and this reference group will hereafter be referred to as teachers. All 240 members of the teacher sample were interviewed by members of the project staff.

All school-board members in each of the 12 school districts, 90 in all, also were interviewed by members of the project staff.

All public officials in each school district who would be eligible to vote on the school district's budget if the district were fiscally dependent were interviewed by staff members of the Survey Research Laboratory. These public officials included the mayor, city manager, or village president; city or village councilmen; and/or township chairmen. Of the 189 persons in this category, interviews were completed with 183.

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[2] W. W. Charters, Jr., "The Social Background of Teaching." *Handbook of Research on Teaching*. Project of the American Educational Research Association. (Edited by N. L. Gage.) Chicago: Rand McNally and Company, 1963, p. 791.

Measurement of Consensus

To ascertain the degree of consensus which existed within and between the reference groups in each of the 12 districts, it was necessary to identify those interview schedule items most appropriate for assessing consensus. After the elimination of open-ended questions, questions which tested the respondent's knowledge of the schools or the school board, and items in which the respondent was asked to evaluate a certain aspect of the school program, the 84 items which remained were used to determine the degree to which consensus existed within each group of respondents in each school district. Thirteen of the 84 questions used in computing consensus dealt with the educational program; 16, with pupil personnel matters; 18, with staff personnel matters; 20, with the nature and operation of the school board; 13, with plant and business management matters; and 4, with current educational issues. All responses were dichotomized according to whether the respondent agreed or disagreed with the item. Noncommittal responses were not considered meaningful for purposes of ascertaining the degree of consensus.

The problem of defining consensus and determining when consensus exists is a perplexing one. The operational definition of the degree of agreement which must be found before consensus may be declared to exist, ranges from a simple majority to a unanimous vote, depending upon one's orientation. In this study within-group consensus was defined as the extent to which the members of a given group tended to select the same response category when responding to a specific interview item. By using this definition, a procedure based on the statistical inferences which can be made about a proportion was developed to determine whether the proportion of responses in a particular response category for any given group of respondents was sufficiently large that it could have occurred by chance no more than 5 percent of the time. By establishing a confidence interval for the proportion of the group which could be expected to answer a particular question in a certain manner, and then using this upper limit as the critical value above which consensus would be declared to exist, the variation in the number of school-board members, public officials, and citizens who were interviewed in each district was negated. With this procedure, the proportion of the group needed to declare that consensus existed decreased as the size of the group increased. However, the probability that at least that large a proportion of the group will respond in a certain manner remains constant.

The degree of consensus within a given group of respondents was measured by the number of interview items, of the possible 84, on which the group exhibited consensus. When the responses to a particular question indicated consensus, a value of one was assigned; when consensus did not exist, a value of zero was given. The degree of consensus within any reference group was obtained by totaling the ones for that group. In addition, a record showing how the group felt about each item, i.e., whether they agreed or disagreed, was kept.

In arriving at a definition of between-group consensus, it was reasoned that it was necessary for each of two groups to exhibit within-group consensus in its response to a particular question if the two groups were to have between-group consensus. Thus, the degree of between-group consensus was measured by the number of items on which the two groups being compared had consensus in the same direction.

Measurement of Conflict Resolution

To obtain data with regard to the relative success enjoyed by each of the 12 school boards in resolving the conflicts with which each was confronted, ratings made by nonparticipant observers and evaluations made by participating school-board members were utilized. Four variables were considered in the measurement of conflict resolution: (a) the extent to which individual board members participated in the deliberation on each issue, (b) the outcome of the vote taken by the board on each issue, (c) the intensity of each issue as perceived by members of the board, and (d) the satisfaction expressed by individual board members with the action taken on each issue. Each item which came before the school board and which was brought to a vote was considered to be an issue, with the exception of such routine matters as approval of minutes, acceptance of invoices, and adjournment of the meeting.

Three members of the research team attended three consecutive meetings of each of the 12 school boards as nonparticipant observers. They recorded data concerning the participation of each board member in the board's deliberations on each issue, recorded the result of the vote taken on each issue, and rated the process employed by the board in resolving the issue. At the close of each meeting each board member was asked to rate both the intensity of concern he perceived regarding each issue and his personal satisfaction with regard to the board's disposition of the issue. The board members recorded their perceptions of intensity of concern and satisfaction on a 10-point rating scale developed for this purpose.

Conflict resolution scores were computed for each school board according to the following formula:

$$(P+V+O+S)\,(I_n)=ICRS,$$

$$\text{and}\,\frac{\Sigma ICRS}{\Sigma I_n}=CRS$$

where:

P = participation score
V = vote score
O = mean observer rating
S = mean satisfaction rating
I_n = mean intensity rating
$ICRS$ = issue conflict resolution score
$\Sigma ICRS$ = sum of issue conflict resolution scores
ΣI_n = sum of mean intensity ratings
CRS = conflict resolution score

Use of the mean intensity rating as a multiplication factor and the sum of the mean intensity ratings as a division factor yielded a final conflict resolution score per unit of intensity for each school board. This score was based upon the assumption that if each of the boards dealt with issues which the members perceived to be of like intensity, the score would reflect the extent to which each board was successful in resolving conflict. The conflict resolution scores thus obtained for the school boards were comparable and could be subjected to common statistical procedures.

Criterion Measures

Two types of financial data were employed as criterion measures in the investigation: (a) data concerning financial support and (b) data concerning budget allocations. Four separate measures reflecting local financial support of the schools were utilized:

1. Local tax rate on equalized valuation for all school purposes
2. Local tax rate on equalized valuation for current operation
3. Required levy rate for current operation (a state aid formula computation)
4. Local tax effort per pupil.

Twelve categories of the school district budget were utilized in examining budget allocations: salaries of professional staff; salaries of clerical workers; textbooks, library books, and periodicals; instructional supplies; total instructional cost; salaries of custodians; plant operation; plant maintenance; school lunch; transportation; capital outlay; and debt service. Allocations to each of these categories were expressed in terms of expenditure per pupil in average daily membership.

Financial data for the school years 1963-64, 1964-65, and 1965-66 were obtained from official reports on file at the Wisconsin Department of Public Instruction. In addition to determining the level of financial support and the amount allocated to each budget category during these three years, changes in each variable over the three-year span also were computed.

Statistical Procedures

Rank order correlation procedures were utilized to test for relationships between consensus in expectations and the *level* of financial support and budget allocations. They also were used to test for relationships between consensus in expectations and *change* in financial support and budget allocations over the three-year span.

Analyses of variance were utilized to test for significant differences in the *level* of financial support and budget allocation between the four districts that ranked highest and the four districts that ranked lowest in consensus, as well as to test for significant differences between the four high and the four low consensus districts with regard to *change* in financial support and budget allocations over the three-year span. Differences between high conflict resolution districts and low conflict resolution districts on the criterion variables also were tested by utilizing analyses of variance.

Consensus in Expectations

The procedure employed to measure consensus in expectations yielded a within-group consensus score for each of the four reference groups in each school district. It also provided the basis for computation of a score representing the degree of consensus between any two reference groups in each school district, i.e., citizens/teachers, citizens/school-board members, citizens/public officials, public officials/school-board members, public officials/teachers, and teachers/school-board members. With these scores, it was possible to rank order the school districts from high to low consensus with regard to each of the four reference groups as well as with regard to the consensus between groups. It also was possible to identify the four districts having the highest degree and the four districts having the lowest degree of consensus in expectations.

Before reporting findings concerning the relationship between consensus in expectations and the criterion variables of financial support and budget allocation, it should be noted that, with two exceptions, neither the differences between districts implicit in the selection procedure nor the various categories of interview schedule items accounted for significant differences in consensus in expectations. It was found that citizens in school districts having either high or low ratios of nonpublic to total school enrollment had significantly less within-group consensus in expectations than did citizens in school districts having a medium ratio of nonpublic to total school enrollment. It also was found that the degree of between-group consensus in expectations on the part of public officials and school-board members differed significantly in school districts having a history of high, medium, or low controversy in the school community. However, the degree of within- and between-group consensus in expectations was not significantly related to school district size, wealth, or fiscal dependence/independence, nor was it significantly related to whether the interview items concerned the nature and operation of the school board, the educational program, pupils, staff, plant or business management, or current issues in education. In only 33 cases out of 6,048 possibilities were two groups found to have within-group consensus, but to hold opposing expectations.

Regarding the relationships between consensus in expectations for the school-board role held by the four reference groups and financial support of the schools, it was found that:

A. Neither within- nor between-group consensus in expectations was significantly related to *change* in financial support over the three-year span.

B. Within- and/or between-group consensus in expectations was in certain instances related to *level* of financial support. Specifically, it was found that for each of the three years:

1. Within-group consensus in expectations on the part of citizens showed a statistically significant, positive relationship to three of the four financial support measures (local mill rate for all school purposes, local mill rate for current operation, and required levy rate for current operation).
2. Between-group consensus in expectations on the part of citizens and teachers showed a significant positive relationship to the required levy rate for current operation.
3. The relationship between within-group consensus on the part of the school board, and school tax rates, although not statistically significant, was consistently inverse.
4. When the four high and four low consensus districts were analyzed, no statistically significant relationships were found between the degree of consensus in expectations and the level of local financial support provided the schools. (It is of interest, however, that the relationship between within-group consensus on the part of citizens and the level of local financial support of the schools consistently approached significance at the .05 level.)

Regarding the relationship between consensus in expectations and the amount allocated to the various budget categories, it was found that

A. Neither within- nor between-group consensus in expectations was significantly related to *change* in budget allocations over the three-year span which was studied.

B. Within- and between-group consensus in expectations was found in certain instances to be related to the *level* of allocations to various budget categories. Specifically, it was found that for each of the three years

1. Within-group consensus on the part of citizens showed a significant positive relationship to the budget allocation for salaries of professional staff, salaries of clerical workers, and total instructional cost.

2. Within-group consensus on the part of public officials showed a significant inverse relationship to the budget allocation for plant operation.

3. Between-group consensus in expectations on the part of citizens and teachers showed a statistically significant, positive relationship to the budget allocation for salaries of professional staff, salaries of clerical workers, total instructional cost, and salaries of custodians.

4. School districts in which board members exhibited high within-group consensus in expectations tended to spend less per pupil for professional salaries and for total instructional cost than did school districts in which board members had low within-group consensus in expectations.

5. School districts in which board members had high within-group consensus in expectations tended to spend more per pupil for operation of the school plant than did school districts in which board members had low within-group consensus in expectations.

6. School districts in which there was high consensus in expectations between teachers and the school board tended to spend less for professional salaries and for total instructional cost than did districts in which there was low consensus in expectations between teachers and the school board.

7. When the four highest and the four lowest consensus districts were analyzed, no statistically significant relationships were found between consensus in expectations and the amount allocated to the various budget categories.

Regarding the relationship between a school board's success in resolving conflict and the criterion variables, it was found that

A. Neither change in financial support nor level of financial support was significantly related to the degree to which the school board was successful in resolving conflict.

B. Neither change in budget allocations nor level of budget allocations was significantly related to the degree to which a school board was successful in resolving conflict.

Conclusions and Implications

Although the concept of consensus in expectations was found to possess considerable utility as a guide for research efforts, it also has certain limitations. It is obvious that while degree of consensus is an important variable, the concept as it was defined in the present study begged the question, "Consensus on what?" "On spending more for the schools?" "Or less?" Also, the question of whether or not there exists some "optimum" level of consensus can be raised. It is conceivable that absolute unanimity in expectations could be equally as debilitating as complete lack of consensus in expectations. The methodological problem of how to measure consensus is one on which reasonable persons are likely to disagree. One severe criticism of most role studies conducted to date is that the size of the respondent group has been largely ignored in computing consensus. To cope with this criticism, a rather stringent control for size of the respondent group was utilized in the measurement of consensus in this study. Furthermore, the *a priori* reasoning that within-group consensus must exist as a condition precedent to between-group consensus tended to restrict quite severely the between-group consensus scores. Obviously, the findings of this study must be interpreted in the light of the operational definition of consensus which was employed.

Two major conclusions were reached with regard to financial support and budget allocation. First, it was concluded that change in these criterion measures typically is not of sufficient magnitude over a three-year span to permit the demonstration of meaningful relationships to such variables as consensus in expectations. Second, it was concluded that the level of financial support and the amount allocated to some budget categories show certain meaningful, although not systematic, relationships to within- and between-group consensus in expectations for the school-board role.

Concerning change in financial support, it was found that in most districts there were only limited incremental gains or losses in either financial support or budget allocations. Furthermore, these changes could be explained by such factors as increased enrollments, district economic growth, and the like. Moreover, the strong equalizing effect of the present Wisconsin state support program, coupled with its incentive for local tax effort, tended to reduce differences in the financial variables among the districts involved in this study. Experience gained in this study indicates that future studies which utilize change in financial support should give greater attention to either selecting districts on the basis of change or utilizing a longer time span for measuring change.

Concerning level of financial support, it was found that consensus in expectations on the part of citizens was consistently and positively related to school tax rates. At the same time, within-group consensus on the part of the school board itself consistently was found to be inversely related to school tax rates, although not at a statistically significant level. This same pattern was found in regard to budget allocations. Within-group consensus of citizens consistently showed a significant positive relationship to allocations for professional, clerical, and custodial salaries, and for total instructional cost, and between-group consensus on the part of citizens and teachers also consistently showed statistically significant positive relationships to these budget categories. On the other hand, school districts having high within-board agreement consistently tended to allocate less for total instructional cost than did districts in which board members exhibited less agreement. Evidently, within-group agreement on expectations does not represent a "generalized good," at least in terms of local tax effort or budget allocations for the schools.

Regarding resolution of conflict by the school board, it was concluded that no significant relationships existed between school board's success in resolving conflict and either local financial support of the schools or allocations to various budget categories. This conclusion, however, may result from shortcomings of the conflict resolution measure employed in this study. The resolution of conflict generally is an extraordinarily complex process and, in many instances, is extremely difficult to assess accurately, let alone quantify precisely. Of course, the acid test of a board's success in conflict resolution is whether or not the issue in question "stays resolved." Thus, long-term observation of the school board, as well as probing interviews with those involved in specific issues, may be required in order to assess conflict resolution accurately.

It was concluded that a useful distinction may be drawn between conflict in expectations and lack of consensus in expectations. Concerning the distinction between conflict in expectations and lack of consensus, in only 33 instances out of 6,048 possibilities were two groups found to have within-group consensus in expectations and at the same time to hold opposing expectations that might be a basis for conflict. Furthermore, only rarely did such potential conflicts relate to issues dealt with by the school board.

It also was concluded that a school board seldom resolves conflict in an open board meeting. The boards which were observed exhibited a tendency to engage in role avoidance with respect to certain of the decision-making aspects of the school-board role, delegating these responsibilities to the superintendent of schools. Despite the fact that the school boards were observed during three consecutive meetings devoted primarily to budget adoption, when presumably major decisions concerning both the level of anticipated local financial support and the amount to be allocated to various budget categories would be made, it was observed that the boards tended to accept the budgetary recommendations of their subcommittees or of the superintendent of schools. Of course, it must be recognized that frequently the process of budget adoption merely formalizes the fiscal components of earlier decisions. A substantial portion of any school budget is "fixed" in the sense that prior decisions commit the board to certain expenditures. For example, the process of collective bargaining with various employee organizations generally culminates in agreements concerning salaries and fringe benefits which must later be included in the school district budget. In addition, the subtle pressures exerted to keep expenditures "in line" with those of similar districts may restrict the parameters within which school-board members perceive that they are able to make decisions.

On the basis of the observations, a further conclusion seems worthy of note. A press for unanimity was apparent in all school-board actions; 89 percent of the issues which came before the 12 boards were resolved by unanimous vote. A post-hoc comparison of board member satisfaction with regard to the manner in which issues had been resolved revealed that often board members were very dissatisfied with the action taken, even though they had voted with the majority. Thus, there is some evidence for concluding that board members exhibit differential tendencies toward voting according to their convictions and that many of them ascribe inordinate emphasis to a "public show of unity."

To return to the concern expressed in the opening section of this paper, the present study has provided empirical evidence in support of the proposition that consensus, or agreement, on the part of the public concerning the role of the schools and of the school board does bear a systematic relationship to the level of local financial support for the schools as well as to the amount allocated to certain budget categories, particularly those categories directly related to the instructional program. Likewise, consensus between teachers and citizens was found to be related to both the level of local financial support and the amount allocated to budget categories directly related to instruction. Conversely, consensus on the part of school-board members themselves tended to be inversely related to both the level of local financial support and the amount allocated to instructional categories of the budget. Although no significant relationships were found between success in resolving conflict on the part of school boards and either financial support or budget allocations, it was observed that board members seldom are forced to deal with overt conflict in open meetings and that they typically attempt to present a public show of unity which tends to mask their differing personal views concerning how a given issue should be resolved. It must be emphasized that this study represents only a first step toward an understanding of the relationships between consensus or conflict, and expenditures for education. Much additional research will be required before definitive answers can be advanced.

Negotiation, the School Budget, and the Future

Robert R. Asnard

There is great interest on the part of teachers, administrators, school-board members, and many others in the subject of teacher/school-board negotiation. Among other things, the movement has been characterized as a drive for "teacher power."

Was it a drive for teacher power when the South Bend, Indiana, agreement for 1967-68 stipulated a maximum class size of 35 pupils? Would it have been a drive for teacher power if the teachers of Hinds County, Mississippi, had negotiated a salary schedule which would have paid *at least* 25 percent of the teachers the huge sum of $5,000 for the year? In 1966-67, the 75th percentile of the salaries paid to full-time teachers in the Hinds County system was $4,885.[1] Rather than a drive for teacher power, the South Bend agreement provision was a drive to provide a minimal condition for adequate education. Had the Hinds County teachers negotiated on salaries (they do not have a negotiation agreement), they would have been negotiating to achieve a salary level barely sufficient to keep them from qualifying for federal antipoverty funds.

When one thinks about negotiation, one tends to see the subject through tinted glasses—tinted to his own particular hue which has evolved out of his particular specific relationship to a school system and darkened or lightened according to his potential gain or loss of prestige, recognition, and status. Therefore, before proceeding further on the subject, I shall discuss the nomenclature of the subject and the extent of teacher/school-board negotiation.

The drive for teacher participation in policy determination, which is now well under way, has been called *collective bargaining, professional negotiation,* and *collective negotiation.* Throughout this paper the single word *negotiation* will denote the subject in its broad term; *negotiation agreements* will be used for all types of negotiation procedures, negotiation agreements, contracts, or similar terms used to classify a written document relating to "wages, hours, working conditions, and other items of mutual interest," or the negotiation of them between employer and employees.

Negotiation agreements fall into two general classifications, procedural

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[1] National Education Association, Research Division. *23rd Biennial Salary Survey of Public-School Professional Personnel, 1966-67: Data for Systems with Enrollments of 12,000 or More.* Research Report 1967-R12. Washington, D.C.: the Association, 1967. p. 56.

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and comprehensive. A procedural agreement may contain organizational recognition, an outline of the negotiation procedures, and procedures for the resolution of impasses, or any combination of the three. On the other hand, a comprehensive agreement may contain any or all of the parts of a procedural agreement *plus* such negotiated items as a salary schedule, leaves of absence, a grievance procedure, class size, and other provisions. A comprehensive agreement is commonly referred to as a contract, and is usually signed by representatives of both the employer and the employee organization and will also generally contain an expiration date.

One more item of nomenclature needs to be defined. The term *teacher organization* means the local education associations affiliated with the National Education Association or one of its state affiliates, local unions of the American Federation of Teachers (AFL-CIO), independent teacher groups, and organized groups of school administrators. School administrators should be included because in some states they have taken the stand that since they are unable by statute to belong to the same bargaining unit as the teachers, they will negotiate their comprehensive agreements just as thoroughly as do the teachers.

Extent of Negotiation

Naturally, the type of negotiation carried on by a school system with a teacher organization will vary widely according to the personalities of the negotiators, the negotiation climate in the system, the presence or absence of a state statute, and other factors. A few facts should place the subject of negotiation in its proper context.

During 1966-67, the NEA Research Division undertook the first national survey of the extent of written negotiation agreements in education when it surveyed the 7,157 school systems with enrollments of 1,000 or more. Over 6,100 systems responded (an 85 percent response rate) and provided copies of 1,540 agreements from 1,531 school systems. In order to count a school system among those having a written negotiation agreement, not only was a completed questionnaire required, but also a copy of the negotiation agreement itself. Thus, every one of the 1,540 agreements for 1966-67 is in the NEA Research Division depository of negotiation agreements, and is available for the use of scholars, researchers, and interested persons.

Of the more than 1,560,000 professional personnel employed by the responding school systems, over 648,000, or 42 percent, were employed in school systems with a negotiation agreement. The 1967-68 survey of negotiation agreements is expected to provide an increase in the number of school systems with agreements to 2,200 or 2,300; these agreements should cover 55 to 65 percent of the professional employees in the responding school systems. The 1966-67 survey verified the likelihood that the smaller the enrollment, the less the chance that the school system has a written negotiation agreement. Thus, a 15 to 25 percent increase in professional personnel covered is not out of line with the expected 50 percent increase in agreements.

Negotiation agreements in 1966-67 covered from 87.5 percent of the professional employees in California to 0.9 percent in North Carolina, and this year will be found in all but four states (Alabama, Georgia, Hawaii, and Louisiana).

The distribution of agreements varied as widely as the state statutes on

TABLE 1.—STATUS OF WRITTEN NEGOTIATION PROCEDURES, 1966-67

State	Total systems surveyed	Responding systems		Systems with procedures			
						Instructional staff	
		Number	Instructional staff	Number	Percent	Number	Percent
Alabama	115	93	23,426	0	0.0%	0	0.0%
Alaska	8	8	1,941	3	37.5	1,327	68.3
Arizona	64	59	11,892	10	16.9	2,860	24.0
Arkansas	118	88	9,571	0	0.0	0	0.0
California	491	395	164,880	301	76.2	144,374	87.5
Colorado	66	60	22,062	17	28.3	14,573	66.0
Connecticut	113	103	26,500	55	53.3	19,394	73.1
Delaware	30	28	4,329	7	25.0	1,248	28.8
District of Columbia	1	1	7,410	0	0.0	0	0.0
Florida	63	53	46,347	5	9.4	10,221	22.0
Georgia	183	120	29,351	0	0.0	0	0.0
Hawaii	1	1	8,200	0	0.0	0	0.0
Idaho	43	37	5,265	14	37.8	2,458	46.6
Illinois	389	341	75,060	62	18.1	38,084	50.7
Indiana	254	215	37,061	29	13.4	6,292	16.9
Iowa	147	136	19,083	8	5.8	2,604	13.6
Kansas	101	84	15,907	26	30.9	8,341	52.4
Kentucky	160	112	19,968	1	0.8	340	1.7
Louisiana	67	53	27,639	0	0.0	0	0.0
Maine	91	79	8,010	5	6.3	1,257	15.6
Maryland	24	21	34,962	5	23.8	12,427	35.5
Massachusetts	205	175	43,391	64	36.5	17,208	39.6
Michigan	379	328	76,237	238	72.5	66,680	87.4
Minnesota	151	141	28,735	19	13.4	4,047	14.0
Mississippi	145	88	14,513	1	1.1	390	2.6
Missouri	163	145	29,646	20	13.7	5,189	17.5
Montana	33	31	5,026	5	16.1	784	15.5
Nebraska	37	33	7,782	2	6.0	2,355	30.2
Nevada	11	11	4,630	1	9.0	1,235	26.6
New Hampshire	45	37	5,913	6	16.2	793	13.4
New Jersey	294	264	53,390	148	56.0	31,869	59.6
New Mexico	45	37	9,804	5	13.5	4,313	43.9
New York	511	469	172,340	77	16.4	89,576	51.9
North Carolina	166	141	35,558	1	0.7	341	0.9
North Dakota	19	17	2,822	1	5.8	515	18.2
Ohio	511	449	83,392	117	26.0	35,043	42.0
Oklahoma	84	72	14,591	3	4.1	3,965	27.1
Oregon	86	74	18,045	55	74.3	15,669	86.8
Pennsylvania	509	457	88,178	42	9.1	24,151	27.3
Rhode Island	27	23	6,449	9	39.1	2,737	42.4
South Carolina	104	72	17,874	1	1.3	604	3.3
South Dakota	24	24	3,788	4	16.6	626	16.5
Tennessee	132	111	28,291	1	0.9	3,448	12.1
Texas	363	313	78,264	6	1.9	17,604	22.4
Utah	300	24	10,433	3	12.5	1,524	14.6
Vermont	44	40	3,293	6	14.9	432	13.1
Virginia	125	100	38,469	2	2.0	4,992	12.9
Washington	117	110	31,491	74	67.2	24,623	78.1
West Virginia	55	46	15,889	2	4.3	446	2.8
Wisconsin	192	176	31,016	67	38.0	20,309	65.4
Wyoming	21	20	2,627	3	14.9	1,054	40.1
Total	7,157	6,115	1,560,741	1,531	25.0%	648,322	41.5%
Stratum							
ENROLLMENT							
1 (100,000 or more)	24	24	260,906	11	45.8%	181,569	69.5%
2 (50,000 to 99,999)	51	50	145,464	23	46.0	76,320	52.4
3 (25,000 to 49,999)	84	80	105,885	34	42.5	48,134	45.4
4 (12,000 to 24,999)	332	290	213,919	117	40.3	89,593	41.8
5 (6,000 to 11,999)	778	680	257,296	227	33.3	93,895	36.4
6 (3,000 to 5,999)	1,626	1,365	263,374	384	28.1	85,953	32.6
7 (1,200 to 2,999)	3,468	2,951	276,123	624	21.1	66,074	23.9
8 (1,000 to 1,199)	794	675	37,774	111	16.4	6,784	17.9
Total	7,157	6,115	1,560,741	1,531	25.0%	648,322	41.5%

Source:
Negotiation Research Digest, September 1967, p. B-4.

the subject. Table 1 shows the number of agreements and the number of personnel covered in 1966-67.

Of the 398 *comprehensive* agreements for 1966-67, 237 were in Michigan, 57 in Massachusetts, and 45 in Connecticut, with the remaining 59 distributed among 10 states. The wide differences among the states in terms of their types of agreements indicates some of the variations among the statutes on the subject. It is not my intention to consider the differences among statutes, but to indicate that a state negotiation statute is a guide. It may provide guidance in the determination of the type of representation, whether representation shall be proportional to membership or exclusive, whether agreements will be procedural or comprehensive, and many other items.

School systems in states without statutes have to "go it alone." They can, and must, formulate their own procedures, directions, and all the details involved in negotiation. Further, since no statute is available to direct as well as guide the school board, the administrators, and the teachers, each step, policy, or procedure is open to conflict, confusion, and chaos. While not every school board or teacher organization in a state with a negotiation statute will agree with that statute 100 percent, few will disagree that the statute has provided valuable direction, guidance, and assistance.

Consider the situation in a state without a state negotiation statute. Some school systems in the state recognize elected committees of individuals, rather than a teacher organization, with which they negotiate; others recognize two teacher organizations and negotiate with them on an equal basis, even though they differ in membership by a ratio of 33 to 1. Still others utilize a negotiating council with representation based on organizational membership, while a fourth group of systems recognize one teacher organization to represent all the teachers, that is, they are exclusive representatives.

By the end of 1967, four states (New York, Minnesota, Nebraska, and Texas) had been added to the list of states with statutes to make a total of 15,[2] plus one state with a state board of education resolution. Each of the next few years should see more states added to the list. But there will be other developments as well.

Agreements

Table 1 provides data on the 1966-67 agreements; the prediction of the number of agreements for this year has already been made. Continued rapid increases in the number of agreements in the next five years may be expected, so that by 1972, half the school systems in the United States with enrollments of 1,000 or more will probably have a written negotiation agreement. Further, by the same year one can expect three-fourths of the certificated personnel to be employed in a school system with an agreement.

There will be changes in agreements, also. Agreements, just like negotiation and all the people involved in negotiation, undergo a development process. Typically the first agreement in a school system recognizes an organization as representing the teachers "for negotiation purposes." Later, the agreement may have detailed negotiation procedures added to it; one of every three agreements with negotiation procedures also contains the detailed procedures to be followed in case of impasse.

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[2] The other states with statutes are Alaska, California, Connecticut, Florida, Massachusetts, Michigan, New Hampshire, Oregon, Rhode Island, Washington and Wisconsin. New Jersey has the State Board of Education resolution.

The final step in the development of an agreement often is the comprehensive agreement, with its advantages and disadvantages. The comprehensive agreement must be considered carefully, because what may be thought to be a disadvantage may also be an advantage, or vice versa.

Budget Implications

While there are relatively few items to be found in a comprehensive agreement which do not have implications for the school budget, the advantages inherent therein will probably outweigh the disadvantages. Consider the comprehensive agreements which have separate salary schedules for every year into 1970. While one may question the power of a school board to commit itself to certain expenditure levels so far into the future, these salary schedule commitments have numerous budgetary implications.

It has not been unusual to defer salary considerations until well into the summer or even early fall. When considered by the school board, the teacher salary schedule was often the last item on the agenda. Certainly such placement on the agenda does not bear even a weak relationship to the percent of the budget spent on this one item, or the importance of the teacher in the educational program.

When salary determinations are delayed, the allocation of appropriate amounts to the various budget categories is virtually impossible, unless the budget is sufficiently loose that the necessary changes between categories do not make much difference. But with the commitment of three consecutive annual salary schedules, the budget allocations will be simpler and more definite, will be made at an earlier date, will probably be more painful to taxpayers, and will be fairer to the staff so that they may make their plans.

This will eliminate one point of contention which has rankled the teaching staff. Place yourself in the position of a teacher who found that the school board could not determine salaries for experienced teachers, but could very quickly establish a salary for beginning teachers. It is not difficult to appreciate the need for a higher recruiting salary, but when a recruiting salary can be determined, the salary schedules for all staff members should also be determined.

Further, such salary determinations in agreements will undoubtedly place salary considerations as the first item in the budget, a position long needed and deserved, with the balance of the budget allocations determined afterwards. Too often the budgets for school systems have allocated funds for all items except teacher salaries, with those determinations made from the "left-overs."

In too many situations, voters have been unwilling to increase the school tax rate to provide needed operational funds. When this has occurred, the entire educational program, including teacher salaries, has suffered. By placing salaries first in the budget, the problem of inadequate funding will be brought directly to the taxpayer; for example, if there are to be special programs, adequate supplies, or similar "extras," additional funds will have to be provided.

The inclusion of a class size provision in comprehensive agreements will also assist in budget development. Probably the item of greatest impact on teacher morale is the number of pupils in the classroom. Research studies on the relationship between class size and level of achievement have been inconclusive. Pilot studies, however, have indicated class size to be of very great concern to teachers, especially since large classes tend to decrease the amount of time that can be devoted to actual teaching.

School building plans are developed on the basis of enrollment projections and pupil-teacher ratios. But often, after the buildings are built, more pupils than were planned are assigned to each teacher. With class size provisions in comprehensive agreements, budget determinations for members of staff will be made more easily.

When these determinations are translated into dollars and cents, they will no doubt cause many taxpayers pain. The pain will probably be minor in those school systems where conditions have been kept at a satisfactory level. Where conditions have been allowed to deteriorate, the pain to taxpayers and politicians may be excruciating. If hopes are realized, there will be few of the latter variety.

No doubt, teacher/school-board negotiation, in and of itself, will cause educational expenses to rise. It cannot be proven that negotiation has caused or will cause expenditures to increase more than they would have without negotiation. Nevertheless, the implication that there will be an impact on the school budget is clear.

The budgetary impact of other matters cannot be overlooked. The more experienced in negotiation educational personnel become, the greater the realization that for many school personnel this is virgin territory. Therefore, there will be the cost of training personnel in the art of negotiating. Further, if arbitration becomes necessary, there will be added expenses.

Moreover, negotiation will be blamed for much more than its share of the increased costs, when, in reality, negotiation will merely accelerate expenditures for education which should have been made in past years.

Negotiation Partly Psychological

Some writers have indicated that negotiation agreements, especially comprehensive agreements, are not needed in education. Undoubtedly, from their point of view they are correct. But they are overlooking the fact that negotiation is partly psychological. Teachers today want to participate in the development and determination of educational policies and programs in their school systems; in some areas this desire can be more dramatically stated as a simple desire to participate in the American economy at a level above subsistence.

However, the desire goes beyond simple platitudes. What administrators and school boards may see as the "right thing" to do *for* teachers or the school system may not be seen in the same light by the teachers. Teachers no longer want to be on the receiving end of paternalistic or unilateral decisions. Too often the school boards have been prosecutor, judge, and jury in the same paternalistic manner.

One feature of negotiation agreements that will help improve the psychological climate but will not reduce the power of school boards, just their arbitrariness, is the growing utilization of final and binding arbitration of grievances.

When a school board establishes a policy, it properly expects the school system's administrators to carry out that policy. If a grievance about the interpretation of such a policy was filed, and if the system's administrators upheld the policy through all the steps of the grievance procedure within the school system, and if the school board was the body of final appeal in the procedure, the board could not in most cases logically be expected to side with the grievant. Were this to happen, the problem would not likely have been settled, but would probably continue to smolder and spread. However, consider the different attitude the grievant would be likely to have even if the grievance were settled in the same way, but settled by final and binding arbitration *outside* the school system.

Forty-one percent of the grievance procedures in last year's agreements went to final and binding arbitration outside the school system, with two-thirds of those being decided by the American Arbitration Association. As the school systems and teacher organizations get further into negotiation, one can reasonably expect both the number of grievance procedures in agreements and the proportion of them having final and binding arbitration outside the school system to increase.

An example of the manner in which a grievance procedure can lessen the magnitude of a problem is provided by what has generally been accepted as the first case of final and binding arbitration in education. The problem arose in Warren, Michigan, over the interpretation of the agreement provision on placement of teachers already in the employ of the school system when the maximum placement credit for previous experience was changed from step 4 to step 8 on the salary schedule. The problem was settled when the arbitrator's decision was rendered in favor of the teachers. However, in rendering his decision, the arbitrator diligently chastized the teacher organization for its carelessness in not carefully reading the final copy of the agreement before signing it.[3]

By entering into an agreement with final and binding arbitration of grievances, a school board itself may be entering into an illegal agreement because it cannot give away the powers and rights given to it by the legislature. This evidently was the thought of the Benton Harbor, Michigan, school board in a recent court case.

The board voluntarily entered into an agreement with a local union of the American Federation of State, County, and Municipal Employees (AFL-CIO). This agreement contained final and binding arbitration of grievances. When a grievance was taken, or about to be taken, to arbitration, the board decided that legally it could not go through with the arbitration. Not so, said the Berrien County Circuit Court. In effect, the court ruled, since the final and binding arbitration concerns only the interpretation of the agreement, the grievance could be submitted to binding arbitration.[4]

No doubt this one decision has caused many boards of education to claim they have been stripped of some of their powers. Thus, they are learning, too; they are learning, as everybody involved in negotiation must learn, that their respective roles are changing and will continue to change. Nevertheless, as we in education proceed farther into negotiation and learn more about it, both directly and indirectly, we shall most probably consider negotiation to be beneficial to all concerned.

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[3] "First Known Case of an Award in Final and Binding Arbitration of a Grievance in Education." *Negotiation Research Digest*. Washington, D.C.: National Education Association, October 1967. p. A-1.

[4] "Michigan Court Rules Final and Binding Arbitration of Grievance Legal." *Negotiation Research Digest*. Washington, D.C.: National Education Association, January 1968. p. A-1.

Negotiated Items

What kinds of things are negotiated? To be sure, there are situations where educational conditions can only be considered deplorable. In others, the conditions must be considered well to the other end of the continuum. However, the items negotiated in both types of systems will be the same—salaries, fringe benefits, and the like. The difference, of course, is that the systems will probably be miles apart in their relative positions on these matters. In other respects the items they negotiate may well be as different as an old Ford tri-motor and a supersonic transport.

But how do you determine what's negotiable? In one case the specific matter of the negotiable subjects was sent to arbitration. The arbitrator agreed completely with the teachers on the subjects considered to be negotiable.[5] Probably the best way of determining what's negotiable is to examine what has been negotiated. To do so, we should consider another major portion of the negotiation research carried on by the NEA Research Division.

Along with collecting data relating to the extent of teacher/school-board negotiation, the NEA Research Division has collected 1,540 negotiation agreements and has them on file in the NEA Research Division depository. These agreements have been carefully analyzed with respect to their content of a possible 180 items. The results of the analyses were published as a 402-page document listing each agreement in each one of the 180 possible subject areas it contained.[6]

To be more specific, what has been negotiated? One item commonly found in last year's negotiation agreements concerned the availability and furnishing of school system data pertinent to the recognized teacher organization. These include such documents as financial reports and drafts of budgets. Another common provision found in one-third of the agreements concerned impasse procedures.

However, more detailed and interesting analysis of negotiation agreement content can be made from the 398 comprehensive agreements. Not only does a count of the agreements containing a given provision indicate its negotiability, but it also gives some information about the interest of the teachers on the matter.

Consider the instructional program items that have been negotiated. From one-third to two-thirds of all the comprehensive agreements last year contained provisions on each of the following: selection and distribution of textbooks, pupil-teacher ratio and class size, instructional aids available for the teacher's use, the school calendar or year, and supervision of extracurricular activity.

Some of the provisions relating to personnel policies and practices which were found in over half of the agreements include teaching assignments in subject areas, duty-free periods for planning, duty-free lunch periods for teachers, promotion to such higher classifications as supervisor or administrator, and intra-system transfers. Also, 353 of the 398 comprehensive agreements contained a grievance procedure.[7]

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[5] "Newport, Rhode Island, Arbitration Award." *Negotiation Research Digest.* Washington, D.C.: National Education Association, January 1968. p. A-3.

[6] National Education Association, Research Division. *Negotiation Agreement Provisions, 1966-67 Edition.* Washington, D.C.: the Association, 1967. 402 p.

Whether negotiation comes easily or painfully to a school system will depend upon a number of factors. One, of course, is the system's history of personnel relations and attitudes toward personnel, with all of their ramifications. Three additional factors that will greatly influence the conditions governing the arrival of negotiation are the present attitudes of the teachers, the administration, and the school board toward negotiation.

A true anecdote which might serve to illuminate that point relates to a comment overheard at the conclusion of a conference session on negotiation. An administrator from a large system said to a companion, "I'm glad we don't have labor problems." He was so out of tune with the happenings in education in general, and his system in particular, he did not realize he would be having real problems if he did not change his attitude.

There will be situations where one of the three parties involved in negotiation will cause unnecessary difficulties to develop in the negotiation process. Inflexibility on the part of some, vindictiveness on the part of others, and unreasonable demand from any party certainly do not help to develop the attitude which will help negotiation to improve the school system for *all* concerned.

Too often we hear only of the problem situations related to negotiation. Contrast the types of negotiation carried on in two states, Michigan and California, because, to many, they are poles apart.

In Michigan, comprehensive agreements are written for a specified period with negotiation for a successor agreement scheduled to begin no earlier than a given number of days, usually 90, before the expiration of the current agreement. Thus, all the labor that must go into negotiating a new agreement must be exerted within a very short period of time, even though such a 90-day period may not occur again for another three years. The parties to an agreement should have been preparing their materials and gathering their data. Too often, however, they have not.

While comprehensive agreements are not currently utilized in California, the negotiation process there is considerably different. In broad terms, any item is negotiable at any time. Thus, negotiation may be carried on continuously. At one time salaries may be negotiated, and at another, textbook selection procedures. Therefore, there will not be the extreme pressure to negotiate "a package" within a short period of time.

Negotiation and the Future

Very important in the determination of the direction of teacher/school-board negotiation are those court decisions that relate to teacher and/or public employee negotiation. The field of negotiation is changing so rapidly that no sooner is something predicted than it comes about. This very thing happened recently in a Michigan Labor Mediation Board decision (March 1968 issue of *Negotiation Research Digest*). The case involved the Oakland County (Michigan) Sheriff's Department and a local union of the American Federation of State, County, and Municipal Employees (AFL-CIO). Of the three major points in the decision, the one which should be of greatest interest to educators is the one that allows the "agency shop" in public employee collective bargaining agreements which are entered into voluntarily. Under such a provision each employee in the bargaining unit must pay membership dues, or the equivalent, to the employee representative.

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[7] *Ibid.*, p. 260.

The precedent established by this decision was quickly followed by a New Hampshire Supreme Court decision approving a "union shop." Under such a provision a new employee has a stipulated number of days in which to become a member of the organization representing the employees of the bargaining unit.

The New Hampshire decision involved the Berlin Police Union, while the Michigan one involved members of the Oakland County Sheriff's Department; both were considerably removed from education. But the implications for education are clear; the pertinent statutes of these two states also cover teachers. Therefore, the two decisions have important philosophical and practical considerations for the teaching profession.

There will be other developments as well. An increasing number of school systems will utilize the comprehensive agreement, or contract. Not only will there be more comprehensive agreements, but they will also be more detailed, especially in the areas of the instructional program and personnel policies and practices.

In anticipation of this trend the NEA Research Division has expanded its program of agreement analysis. Where each of last year's agreements was analyzed for 180 items, each of the 1967-68 agreements will be analyzed for 394 items. With the expected increase in agreements this year and the greater number of items for which each agreement will be analyzed, the total number of analyses expected to be done on this year's agreements will more than triple. This substantial increase is being made possible through optical scanning techniques.

Boards of education will gradually realize and accept the fact that negotiation in education is here to stay. Some boards in states with mandatory negotiation statutes have not seen fit to negotiate with their teachers. As a result, they have caused some attitudes to harden. So also have teacher organizations caused attitudes to harden when their demands have been unrealistic or excessive.

Over a period of time, negotiation should be of benefit to education. This will come about when the teacher organizations, administrators, and school boards work together to improve the *total* educational program. This, however, will take time and experience.

As each party to the negotiation ritual becomes more aware of the "rules of the game," the advent of negotiation can mark a new era in education. We should all work diligently to make sure that mark is a positive one.

Salary Schedules in Higher Education

William S. Graybeal and *Sheila Martin*

WHAT INFORMATION is available to present and prospective faculty in higher education to enable them to estimate the level of salary being paid to faculty having given qualifications? To what extent do institutions provide written statements of their policies which influence the salary status of faculty? Data from the 1967-68 and previous surveys of salaries in higher education conducted by the NEA Research Division provide some answers to these questions.

Prevalence of Salary Schedules

A salary schedule is an official statement designating the minimum and maximum salaries for each faculty rank, and generally also, the number and amount of salary increments for each rank. Table 1 shows the percentages of higher education institutions grouped by type which have reported use of a salary schedule in the seven surveys beginning in 1955-56. In the most recent survey, for 1967-68, about half of the four-year and almost two-thirds of the two-year institutions report having a schedule. Also, salary schedules tend to be more widespread among colleges than among universities, and among public institutions than among nonpublic.

If the institutions which report they expect to adopt a schedule are combined with those which report they already have one, the total number having a definite interest in salary schedules amounts to about three-fifths of the four-year institutions and almost three-fourths of the two-year institutions.

To respondents *salary schedule* may mean anything from a list of individual faculty members with their annual salaries to a comprehensive statement covering several salary-related policies. This, together with changes in the number of institutions responding in the various surveys, contributes to the variations during the past 10 years in the percentages of four-year institutions reporting having a salary schedule. Also, improvement in the accuracy of respondents' interpretation of *salary schedule* may have contributed to the apparent decrease in the proportion of institutions which report having a schedule.

Deviations from Salary Schedules

To obtain faculty in fields of scarcity or to maintain high quality of staff in some departments, institutions of higher education sometimes award a higher rank or pay a higher salary than the schedule provides, or both.

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As shown in Table 2, the most frequently reported deviation among four-year institutions to attract faculty in fields of scarcity is paying a higher *salary* than the schedule would provide, a practice which has tended to increase slightly during the past eight years, particularly among the universities. The percentages offering a higher *rank* or *both* higher rank and higher salary have varied slightly, with some tendency to decrease.

TABLE 1.—PERCENT OF HIGHER EDUCATION INSTITUTIONS HAVING AND EXPECTING TO HAVE A SALARY SCHEDULE, BIENNIALLY SINCE 1955-56, BY TYPE OF INSTITUTION

Group of institutions and status of salary schedule	Percent of institutions						
	1955-56	1957-58	1959-60	1961-62	1963-64	1965-66	1967-68
4-YEAR INSTITUTIONS							
Public universities							
Have schedule	51.3%	62.0%	60.2%	48.0%	47.1%	48.7%	46.4%
Have or expect to have schedule	59.0	68.4	66.7	48.0	49.6	57.4	48.6
Nonpublic universities							
Have schedule	47.6	49.4	52.7	48.9	38.2	38.1	31.4
Have or expect to have schedule	54.0	86.4	59.1	55.3	50.6	47.6	44.1
Public colleges							
Have schedule	72.9	75.3	71.4	72.7	72.1	62.3	53.1
Have or expect to have schedule	75.8	82.7	77.2	76.3	78.5	65.4	60.0
Nonpublic colleges							
Have schedule	67.8	66.2	67.8	60.3	59.6	59.7	56.0
Have or expect to have schedule	77.3	82.0	83.2	74.3	75.2	75.9	69.5
Total, 4-year							
Have schedule	66.9	67.3	66.7	62.2	59.0	56.6	51.8
Have or expect to have schedule	73.6	81.9	78.1	71.5	70.6	68.3	62.3
2-YEAR INSTITUTIONS							
Public institutions							
Have schedule	...	...	...	78.0	84.3	79.3	74.6
Have or expect to have schedule	...	...	...	82.0	89.7	84.5	78.4
Nonpublic institutions							
Have schedule	...	...	...	41.5	38.2	38.8	37.9
Have or expect to have schedule	...	...	...	60.4	59.2	62.5	54.9
Total, 2-year							
Have schedule	...	...	...	65.5	69.8	68.2	65.9
Have or expect to have schedule	...	...	...	74.6	80.1	78.5	72.9

Source:
National Education Association, Research Division. Biennial reports on salaries and salary schedules in higher education.

TABLE 2.—PERCENT OF INSTITUTIONS OF HIGHER EDUCATION WHICH REPORT THAT THEY DEVIATE FROM THEIR SALARY SCHEDULES TO OBTAIN TEACHERS IN FIELDS OF SCARCITY

Type of institution, and practice for deviating from salary schedule	Percent of institutions having salary schedules			
	1961-62	1963-64	1965-66	1967-68
4-YEAR INSTITUTIONS				
Public universities				
Offer higher rank	26.1%	12.5%	3.8%	10.0%
Offer higher salary	19.6	22.9	24.5	36.3
Offer both higher rank and higher salary	15.2	14.6	32.1	12.5
Nonpublic universities				
Offer higher rank	7.0	3.1	3.6	0.0
Offer higher salary	27.9	31.3	39.3	41.4
Offer both higher rank and higher salary	11.6	12.5	7.1	17.2
Public colleges				
Offer higher rank	15.4	23.1	22.8	11.1
Offer higher salary	17.4	11.5	28.7	24.4
Offer both higher rank and higher salary	12.3	16.7	5.9	10.0
Nonpublic colleges				
Offer higher rank	7.1	9.2	9.0	8.3
Offer higher salary	18.2	20.2	17.9	19.0
Offer both higher rank and higher salary	6.8	5.5	6.0	6.0
Total, 4-year institutions				
Offer higher rank	10.7	13.0	11.6	8.6
Offer higher salary	18.8	18.6	20.5	23.6
Offer both higher rank and higher salary	9.6	9.8	8.5	8.2
2-YEAR INSTITUTIONS				
Public, offer higher salary	...	...	...	21.4
Nonpublic, offer higher salary	...	...	...	13.0
Total, offer higher salary	...	...	...	20.3

Source:
National Education Association, Research Division. Biennial reports on salaries and salary schedules in higher education.

About one-fifth of the public two-year institutions and about one-eighth of the nonpublic offer higher salaries than their schedules provide in order to attract persons in fields of scarcity.

As shown in Table 3, larger percentages of nonpublic universities than public report paying salaries which are higher or lower than the schedule normally would provide for faculty in some departments. Some public two-year institutions also follow this practice.

Written Policy Statements

Table 4 lists eight areas of salary-related policies that provide valuable information as part of or a supplement to the salary schedule document. Most often documented is a prescribed minimum academic preparation for appointment or promotion to a given

TABLE 3.—PERCENT OF INSTITUTIONS OF HIGHER EDUCATION WHICH REPORT THAT THEY DEVIATE FROM THEIR SALARY SCHEDULES TO PROVIDE HIGHER OR LOWER SALARIES TO FACULTY IN SOME DEPARTMENTS

	Percent of institutions having salary schedules			
Type of institution	1961-62	1963-64	1965-66	1967-68
4-YEAR INSTITUTIONS				
Public universities	8.5%	12.5%	7.1%	19.0%
Nonpublic universities	29.8	26.7	25.8	30.0
Public colleges	2.0	3.2	0.7	3.3
Nonpublic colleges	8.5	5.2	3.2	5.0
Total, 4-year institutions	7.1	6.4	4.2	8.2
2-YEAR INSTITUTIONS				
Public	...	...	...	7.1
Nonpublic	...	...	...	0.0
Total, 2-year institutions	...	...	...	6.3

Source:
National Education Association, Research Division. Biennial reports on salaries and salary schedules in higher education.

rank—reported by about three-fifths of the four-year institutions, by about four-fifths of the public two-year institutions, and by almost half of the nonpublic two-year institutions. Second in frequency is specification of the minimum years of experience required for appointment or promotion—reported by about half of the four-year institutions, two-thirds of the public two-year institutions, and about one-fourth of the nonpublic two-year institutions. Requirements other than academic preparation and/or experience for appointment or promotion are documented by about two-fifths of the four-year institutions and about one-fourth of the two-year.

About one-fourth of the four-year institutions and about two-fifths of the two-year institutions having ranks have written policies providing salary differentials within ranks on the basis of academic preparation. Documentation of objective bases for salary increments is more widespread among public than among nonpublic institutions—reported by almost half of the public four-year and almost three-fourths of the public two-year institutions, but by only about one-third of the nonpublic institutions.

Limits on the proportion of faculty having a given rank are documented in the schedules of about one-fourth of the public four-year institutions, about one-twelfth of the nonpublic four-year institutions and about one-eighth of the two-year institutions. Use of a ratio or formula to relate extended-year salaries to academic-year salaries is reported by about three-fifths of the public institutions, but about one-fourth of the nonpublic four-year and one-eighth of the nonpublic two-year institutions.

TABLE 4.—PRESENCE OF DOCUMENTED POLICIES RELATED TO SALARIES OF FACULTY, BY TYPE OF INSTITUTION, 1967-68

	Percent having documented policy					
	4-year institutions			2-year institutions		
Salary-related practice	Public	Non-public	Total	Public	Non-public	Total
1. A prescribed level of academic preparation is required for appointment or promotion to a given rank (appointment to faculty status)	61.5%	62.1%	61.9%	79.8%	45.8%	71.9%
2. A prescribed number of years of experience is required for appointment or promotion to a given rank (appointment to faculty status)	49.4	50.9	50.4	66.3	27.1	57.2
3. Qualifications other than academic preparation and experience are required for appointment or promotion to a given rank (appointment to faculty status)	41.1	44.4	43.4	29.2	16.7	26.3
4. Salary differentials are maintained within ranks on the basis of academic preparation	30.2	25.8	27.2	40.2[a]	47.5[a]	41.4[a]
5. The basis on which salary increments are awarded is described in objective terms (annual, service, etc.)	46.0	34.8	38.4	74.1	38.9	65.9
6. Decision regarding the assignment of a given rank requires consideration of the proportion of the faculty already having the given rank	25.3	7.1	13.0	12.6[a]	12.8[a]	12.6[a]
7. Salaries of faculty employed beyond the academic year (11- or 12-month, summer school) are related to the academic-year salaries by a formula	60.1	24.7	36.1	60.5	12.5	49.4
8. On matters of faculty salary or welfare, a formal procedure is maintained by which representatives of the governing board of the institution or the administration agree to						
(a) Confer with faculty representatives	21.7	21.1	21.3	25.6	11.5	22.4
or (b) Negotiate with faculty representatives	0.6	1.1	1.0	10.7	0.7	8.4

Source:
National Education Association, Research Division. Data to be published in *Salaries in Higher Education, 1967-68*. Research Report in progress.

[a] Institutions having faculty ranks.

TABLE 5.—THE MOST COMMON PROVISIONS OF SALARY SCHEDULES IN HIGHER EDUCATION, 1965-66

	Percent of institution salary schedules having provision			
	4-year institutions		2-year public institutions	
Salary schedule provision	Public	Non-public	Academic preparation	Faculty rank
Minimum salary	99.0%	99.6%	99.5%	97.1%
Maximum salary	95.5	96.4	100.0	89.9
Regular increments	67.3	21.9	98.9	76.8
Merit and/or longevity increments	8.9	0.7	8.2	4.3
Qualifications for appointment				
Preparation	21.9	7.7	...	26.1
Experience	15.8	6.2		
Salary stratification within ranks	28.2	11.3	...	11.6
Percent of faculty at each rank	14.4	0.0	...	0.0
Allowance of credit for previous experience	...	...	39.0	7.2
Additional hours of credit required to receive increments	0.5	0.0	6.0	...
Number of institution schedules	202	274	182	69

Sources:

National Education Association, Research Division. *Faculty Salary Schedules in Colleges and Universities, 1965-66.* Research Report 1967-R14. Washington, D.C.: the Association, 1967. 42 p.

National Education Association, Research Division. *Faculty Salary Schedules in Public Community-Junior Colleges, 1965-66.* Research Report 1967-R9. Washington, D.C.: the Association, 1967. 45 p.

Written provision of a formal procedure by which the administration and faculty communicate on matters of salary or faculty welfare is reported by about one-fifth of the four-year institutions and almost one-third of the two-year institutions. This procedure is *an agreement to confer* in about one-fifth of the four-year institutions, one-fourth of the public two-year institutions, and about one-tenth of the nonpublic two-year institutions; it is an *agreement to negotiate* in one public two-year institution in 10, but by 1 percent or less of the other groups of institutions.

Scope and Types of Provisions

The salary schedules of higher education institutions usually list minimum and maximum salaries by rank or academic preparation level, but they may also specify a variety of other policies, as summarized in Table 5. All four-year institutions structure their salary schedules on faculty rank. In addition to minimum and maximum scheduled salaries, the most frequently appearing provisions are for increments, qualifications for appointment and promotion to faculty ranks, and salary stratification within ranks according to academic preparation. In the public institutions, about one-eighth of the schedules also specify the percentage of faculty who may hold each rank at a given time.

In the majority of public two-year institutions, salaries are based on academic preparation with widespread use of the following four strata: bachelor's degree (84 percent), master's degree (100 percent), master's degree plus 1 year (89 percent), and doctor's degree (85 percent). The most frequently appearing provisions are for minimums and maximums, increments, allowance of credit for experience, and amount of credit required for increments. The types of provisions in the salary schedules of public two-year institutions with faculty ranks tend to parallel those of four-year institutions.

Comprehensiveness

The schedules of four-year institutions can be classified by level of comprehensiveness in providing salary-related information, as follows:

	Public	*Nonpublic*
1. Minimum and/or maximum salary only	28.2%	72.2%
2. Item 1 plus minimum qualifications for appointment and/or provision for salary stratification within ranks	4.5	8.4
3. Item 1 plus increments	28.2	10.9
4. Item 2 plus increments	39.1	8.4

The salary schedules of public four-year institutions tend to be more comprehensive than those of nonpublic: about three in eight salary schedules of the former are classified in the most comprehensive category while only 1 in 12 of the latter is so classified.

Minimum and Maximum Salaries

Table 6 shows the first and third quartiles and the median of the scheduled minimum and maximum salaries in public and nonpublic four-year institutions, and in public two-year colleges for 1965-66. These figures are higher in the public than in the nonpublic four-year institutions.

Increments

Regular increments are prescribed in approximately two-thirds of the salary schedules of public four-year institutions, in one-fifth of those in nonpublic institutions, and in more than nine-tenths of the public two-year institution schedules. As shown in Table 7, the number of increments in four-year institutions ranges from 2 to 25, with a median of 6. However, above the rank of instructor the range narrows to 4 to 16. The median total amounts added by increments range from $2,120 for instructors to $3,357 for professors.

As shown in Table 8, the public two-year institutions that base their salary schedules on academic preparation have an average of 10 to 13 increments; those that base their schedules on faculty rank, 7 to 8. Mean increments range from $245 to $397, with a tendency to be higher in the schedules using faculty ranks than in those using academic preparation.

State-Wide Salary Schedules

Nineteen states have a state-wide salary policy for their institutions of higher education. Ten of these states —California, Louisiana, Maine, Maryland, Nebraska, New Jersey, New

TABLE 6.—MEDIANS AND QUARTILES OF SCHEDULED MINIMUM AND MAXIMUM SALARIES IN HIGHER EDUCATION, BY TYPE OF INSTITUTION AND SCHEDULE STRUCTURE, 1965-66

Item	4-year institutions						2-year institutions		
	Public			Nonpublic			Public		
	Q^1	Median	Q^3	Q^1	Median	Q^3	Q^1	Median	Q^3
SCHEDULED MINIMUM SALARIES									
Based on rank:									
Professor	$ 8,617	$10,031	$11,205	$ 8,007	$9,051	$10,125	$ 8,550	$ 9,594	$10,333
Associate professor	7,533	8,265	9,164	6,928	7,631	8,447	7,511	8,148	8,719
Assistant professor	6,421	6,989	7,432	6,062	6,577	7,175	6,446	7,013	7,467
Instructor	5,375	5,940	6,619	5,200	5,631	6,059	5,615	6,121	6,414
Based on academic preparation:									
B.A.	...	...	...	...	...	...	5,097	5,458	6,028
M.A.	...	...	...	...	...	...	5,564	6,012	6,576
M.A. + 1 year	...	...	...	...	...	...	5,991	6,488	7,147
Ph.D.	...	...	...	...	...	...	6,574	7,185	7,940
SCHEDULED MAXIMUM SALARIES									
Based on rank:									
Professor	12,483	14,333	15,438	10,427	12,300	14,194	10,958	12,365	14,208
Associate professor	10,454	11,605	12,288	9,045	10,068	11,286	9,861	10,700	12,194
Assistant professor	8,962	9,421	10,307	7,962	8,594	9,375	8,778	9,342	10,357
Instructor	7,470	8,110	8,662	6,677	7,299	7,821	7,615	7,950	9,018
Based on academic preparation:									
B.A.	...	...	...	...	...	...	6,932	7,906	8,902
M.A.	...	...	...	...	...	...	8,062	8,967	10,016
M.A. + 1 year	...	...	...	...	...	...	8,750	9,825	11,066
Ph.D.	...	...	...	...	...	...	9,562	11,105	12,217

Sources:

National Education Association, Research Division. *Faculty Salary Schedules in Colleges and Universities, 1965-66.* Research Report 1967-R14. Washington, D.C.: the Association, 1967. 42 p.

National Education Association, Research Division. *Faculty Salary Schedules in Public Community-Junior Colleges, 1965-66.* Research Report 1967-R9. Washington, D.C.: the Association, 1967. 45 p.

TABLE 7.—NUMBER OF INCREMENTS AND TOTAL AMOUNT ADDED BY INCREMENTS IN SALARY SCHEDULES OF PUBLIC 4-YEAR INSTITUTIONS, 1965-66

Item	Faculty rank			
	Professor	Associate professor	Assistant professor	Instructor
Range in number of increments				
Low	4	5	4	2
Median	6	6	6	6
High	16	14	12	25
Range in total amount added by increments				
Low	$1,250	$1,625	$1,083	$ 562
Median	3,357	2,896	2,319	2,120
High	7,250	5,750	4,750	4,250

Source:
National Education Association, Research Division. *Faculty Salary Schedules in Colleges and Universities, 1965-66.* Research Report 1967-R14. Washington, D.C.: the Association, 1967. 42 p.

York, Oregon, Pennsylvania, and Tennessee—set minimum and/or maximum salaries for their two-year institutions; four other states—Alabama, Hawaii, North Carolina, and Virginia—schedule salaries for their two-year colleges. The remaining five states—Connecticut, Massachusetts, Minnesota, Rhode Island, and Vermont—have salary schedules for both four-year and two-year institutions. Rhode Island and Vermont set the same scheduled salaries at their one two-year college and in their four-year institutions.

Comprehensiveness

The comprehensiveness of the statewide schedules applying to four-year institutions ranges from states, such as New York, where only maximum salaries are specified, and Minnesota, where the schedule specifies only minimum salaries, to Nebraska which, in addition to minimums, maximums,

TABLE 8.—MEAN ANNUAL SALARY INCREMENTS SCHEDULED IN PUBLIC 2-YEAR INSTITUTIONS, BY TYPE OF SALARY SCHEDULE STRUCTURE, 1965-66

Item	Mean number	Mean amount
SCHEDULE BASED ON PREPARATION		
B.A.	10	$245
M.A.	12	251
M.A. + 1 yr.	13	263
Ph.D.	13	278
SCHEDULE BASED ON RANK		
Professor	7	397
Associate professor	7	352
Assistant professor	8	296
Instructor	7	267

Source:
National Education Association, Research Division. *Faculty Salary Schedules in Public Community-Junior Colleges, 1965-66.* Research Report 1967-R9. Washington, D.C.: the Association, 1967. 45 p.

TABLE 9.—MAJOR PROVISIONS OF STATE SALARY POLICIES APPLYING TO STATE-SUPPORTED 4-YEAR AND 2-YEAR INSTITUTIONS, 1967-68

State	Minimum salary	Maximum salary	Increments	Qualifications for appointment	Salary stratification within faculty rank by preparation	Percent of faculty allowed at each rank	Credit allowed for previous experience
4-YEAR INSTITUTIONS							
California	X	X	X		X		
Connecticut	X	X	X	X			
Louisiana	X	X	X		X		
Maine	X	X	X	X			
Maryland	X	X	X				
Massachusetts	X	X					
Minnesota	X						
Nebraska	X	X	X		X	X	
New Jersey	X	X	X	X		X	
New York		X					
Oregon	X	X	X				
Pennsylvania	X	X	X	X			
Rhode Island	X	X					
Tennessee	X	X	X[a]		X		
Vermont	X	X					
2-YEAR INSTITUTIONS							
Alabama	X	X	X				
Connecticut	X	X	X	X			
Hawaii	X	X	X				X
Massachusetts	X	X	X				
Minnesota	X	X	X				
North Carolina	X	X	X				
Rhode Island	X	X					
Vermont	X	X					
Virginia	X	X		X			

[a] Maximum increase allowed for current session only.

and increments, specifies stratification within ranks according to academic preparation, and restricts the percentage of each institution's faculty who may hold appointments at a given rank. In most states having state-wide salary schedules for four-year institutions, the major university is either exempted or has a separate schedule.

The major provisions of the state-wide salary schedules are summarized in Table 9.

In the past two years there has been a slight trend away from the use of comprehensive state-wide salary schedule for institutions of higher education. For example, in 1965-66 the schedules of Minnesota and New York specified minimum and maximum salaries; New York also prescribed a scale of regular increments and the percentage of faculty allowed at each rank. For the 1967-68 academic year the state-wide schedule for Minnesota prescribes only minimum salaries; and New York, only maximums. Prior to 1965-66 the Georgia schedule specified minimum and maximum salaries; the latest schedule specifies only average salaries.

Minimum and Maximum Salaries

Table 10 shows for 15 states the minimum and maximum salaries scheduled state-wide for four-year institutions by rank for 1967-68. With the exception of salaries for professors, the range between the highest and lowest *minimum* salaries is not widely different from that for *maximum* salaries for the same rank. The ratios of the median maximum scheduled salaries to the median minimum scheduled salaries are: professor, 1.43; associate professor, 1.44; assistant professor, 1.50; and instructor, 1.45.

Table 11 shows the percentage of increase in scheduled minimum and maximum salaries at each rank from 1965-66 to 1967-68. The medians of the percentages of increase over the two-year period are greater for maximum salaries than for the minimum salaries. For comparison: The percentage increases in the median salaries *paid* during this period were 13.6 percent for professors and 13.3 percent for associate professors.

For two-year institutions, shown in Table 12, state-wide scheduled salaries tend to be higher in states structuring their schedules by faculty rank than in those using academic preparation.

Increments

Table 13 shows the numbers and amounts of salary increments for four-year institutions; and Table 14, the same items for two-year institutions. For four-year institutions, California, Maine, and Oregon schedule salary increments on a percentage basis; the remaining state, with two exceptions, schedules steps of regular amounts, although the number of increments and amounts may differ by rank. Pennsylvania schedules increments

TABLE 10.—MINIMUM AND MAXIMUM SALARIES PROVIDED IN STATE SALARY POLICIES APPLYING TO STATE-SUPPORTED 4-YEAR DEGREE-GRANTING INSTITUTIONS, 1967-68

State	Professor		Associate professor		Assistant professor		Instructor	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
California	$13,332	$17,016	$10,464	$13,332	$8,268	$10,548	$7,488	$ 9,564
Connecticut	13,560	18,100	11,640	15,640	9,580	12,660	8,520	10,760
Louisiana	9,600	14,200	8,200	13,200	7,200	12,200	5,700	10,200
Maine	11,830	15,860	9,698	13,052	7,982	10,712	6,240	8,372
Maryland	10,600	16,000	9,000	13,000	7,400	10,200	6,300	8,400
Massachusetts	9,900	18,007	8,400	14,157	7,500	11,094	6,500	9,508
Minnesota	11,000	...	9,500	...	8,000	...	6,500	...
Nebraska	10,600	13,000	8,750	12,250	7,750	11,500	7,500	9,550
New Jersey	12,003	15,603	9,875	12,839	8,124	10,560	7,018	9,124
New York	...	24,000	...	18,000	...	14,000	...	9,750
Oregon	11,700	18,156	9,204	14,280	7,548	11,712	6,000	9,312
Pennsylvania	11,240	15,080	9,260	12,400	7,610	10,200	6,580	8,820
Rhode Island	12,000	18,000	10,000	15,000	8,000	13,000	7,000	9,000
Tennessee	7,000	14,500	6,400	13,500	6,300	12,500	5,000	10,500
Vermont	9,000	15,000	8,000	12,000	7,000	10,000	6,000	8,000
Highest	13,560	24,000	11,640	18,000	9,580	14,000	8,520	10,760
Mean	10,955	16,609	9,171	13,761	7,733	11,492	6,596	9,347
Median	11,120	15,930	9,232	13,266	7,579	11,297	6,500	9,410
Lowest	7,000	13,000	6,400	12,000	6,300	10,000	5,000	8,000

TABLE 11.—PERCENT OF INCREASE IN MINIMUM AND MAXIMUM SCHEDULED SALARIES IN STATE SALARY POLICIES APPLYING TO STATE-SUPPORTED 4-YEAR DEGREE-GRANTING INSTITUTIONS, 1965-66 TO 1967-68

State	Professor		Associate professor		Assistant professor		Instructor	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
California	12.0%	12.0%	12.1%	12.0%	12.0%	12.1%	11.8%	11.9%
Connecticut	12.6	14.6	12.4	16.7	13.8	14.1	13.9	9.8
Louisiana	14.3	18.3	17.1	32.0	20.0	35.6	26.7	45.7
Maine	28.2	27.6	27.7	28.1	27.9	28.0	21.2	21.5
Maryland	6.0	12.7	12.5	13.0	5.7	13.3	5.0	12.0
Massachusetts	0.0	28.6	0.0	37.4	0.0	16.8	0.0	14.6
Minnesota	37.5	...	35.7	...	33.3	...	30.0	...
Nebraska	23.3	18.2	21.5	31.7	21.1	40.2	21.0	24.0
New Jersey	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
New York	...	49.9	...	55.2	...	68.9	...	21.9
Oregon	9.3	19.4	9.6	19.0	9.4	19.2	9.1	24.2
Pennsylvania	10.2	10.2	10.2	10.3	10.1	10.2	10.4	10.3
Rhode Island	20.0	20.0	25.0	36.4	14.3	44.4	16.7	20.0
Tennessee	11.1	16.0	12.3	17.4	16.7	19.0	19.0	23.5
Vermont	20.0	50.0	23.1	33.0	27.3	33.3	20.0	23.1
Percent increase of the median salary	12.3	13.8	14.1	14.1	13.8	22.0	9.1	17.6
Percent increase of the mean salary	14.8	21.0	15.5	23.1	14.5	23.3	14.3	16.9
ALL STATES								
Highest	37.5	50.0	35.7	37.4	33.3	68.9	30.0	45.7
Median	12.3	18.3	12.5	23.6	14.1	19.1	15.3	20.8
Lowest	0.0	5.0	0.0	5.0	0.0	5.0	0.0	5.0

TABLE 12.—MINIMUM AND MAXIMUM SALARIES PROVIDED IN STATE SALARY POLICIES APPLYING TO STATE-SUPPORTED COMMUNITY-JUNIOR COLLEGES, 1967-68

State	Academic preparation level or faculty rank							
	Bachelor's degree		Master's degree		6 years		Doctor's degree	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Alabama	...	...	$6,930	$ 7,370	$ 7,480	$ 7,920	$ 8,910	$ 9,350
Hawaii	$6,240	$ 9,600	6,756	10,380	7,896	12,144	8,532	13,128
Minnesota	...	...	5,700	6,500	6,300	7,100	...	...
North Carolina	5,400	6,777	6,300	9,054	...	...	7,803	10,557
High	...	...	6,930	10,380	7,896	12,144	8,910	13,128
Low	...	...	5,700	6,500	6,300	7,100	7,803	9,350
	Instructor		Assistant professor		Associate professor		Professor	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Connecticut	$8,520	$10,440	$9,580	$11,860	$11,640	$14,280	$13,560	$16,920
Massachusetts	6,448	8,226	7,490	9,565	8,663	11,034	10,337	13,208
Rhode Island	7,000	9,000	8,000	13,000	10,000	15,000	...	...
Vermont	6,000	8,000	7,000	10,000	8,000	12,000	9,000	15,000
Virginia	6,200	8,680	7,750	10,230	9,300	11,780	10,850	13,330
High	8,520	10,440	9,580	13,000	11,640	15,000	13,560	16,920
Median	6,448	8,680	7,750	10,230	9,300	12,000	10,593	14,165
Low	6,000	8,000	7,000	9,565	8,000	11,034	9,000	13,208

TABLE 13.—NUMBER AND SIZE OF SALARY INCREMENTS PROVIDED IN STATE SALARY SCHEDULES FOR 4-YEAR DEGREE-GRANTING INSTITUTIONS, 1967-68

State	Professors		Associate professors		Assistant professors		Instructors	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount
California	4	5%	4	5%	4	5%	4	5%
Connecticut	6	$560	6	$440	6	$380	6	$320
Louisiana[a]	...	...	...	...	...	...	4	$200
Maine	6	5.1%	6	5.1%	6	5.1%	6	5.1%
Maryland	9	$600	8	$500	7	$400	7	$300
Nebraska	8	$300	7	$300	6	$300	5	$300
New Jersey	6	$600	6	$494	6	$406	6	$351
Oregon	9	5%	9	5%	9	5%	9	5%
Pennsylvania	6	$560-720	6	$460-600	6	$390-480	6	$330-420
Tennessee[b]	...	...	...	...	...	...	...	...

[a] In addition to specified increments for instructors, increments not in excess of $1,000 "may be granted to individuals of outstanding ability and performance."

[b] Provides only for maximum raises for 1967-68: professor, $1,500; associate professor, $1,200; assistant professor, $1,000; instructor, $900.

TABLE 14.—NUMBER AND SIZE OF SALARY INCREMENTS PROVIDED IN STATE SALARY SCHEDULES FOR 2-YEAR COMMUNITY-JUNIOR COLLEGES, 1967-68

State	Level of faculty rank							
	Bachelor's degree		Master's degree		6 years		Doctor's degree	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount
Alabama	...	...	2	$220	2	$220	2	$220
Hawaii	11	Aver. $305	11	Aver. $329	11	Aver. $386	11	Aver. $415
Minnesota	...	...	8	100	8	100	...	...
North Carolina	9	153	9	306	...	...	9	306

State	Instructor		Assistant professor		Associate professor		Professor	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount
Connecticut	6	$320	6	$380	6	$440	6	$560
Massachusetts	6	296	6	346	6	395	6	478

which increase in amount each successive year. Increments scheduled for two-year institutions tend to be smaller than those scheduled for four-year institutions.

Conclusion

In about half of the institutions of higher education, faculty may be given some information useful in evaluating their economic status and potential through the faculty handbook, salary schedule, and related documents. Salary schedules are more widespread among the public than among the nonpublic institutions, and among colleges than among universities. The salary schedules of the public institutions tend to be more comprehensive than those in the nonpublic institutions in specifying the salary-related policies of the institution. The relatively small proportion of institutions having salary schedules which provide comprehensive coverage of salary-related policies, the continuing scheduled provision of some flexibility to reflect in salary a subjective evaluation of the worth of an individual, and the willingness to depart from the schedule in response to wide differences in the market for some disciplines, suggest that salary schedules in higher education are unique and probably will continue to be quite different from those provided in public elementary and secondary schools.

Awards in School Finance Research

A Financial Analysis of Title I, Public Law 89-10, and the Formation of a Defensible Federal Financial Aid Distribution Plan

Myron L. Anderson

As THE GOAL OF EQUALITY in educational opportunities for all children came more sharply into focus, the question of fiscal support needed to provide adequate and quality education became an issue. There is no doubt that education is valued and accepted as the key to the future of the United States and its people. However, students of school finance recognize that the federal-state-local relationship must still be resolved.

As illustrated in the literature, a concern for equalizing educational opportunities for all the children in our nation has existed for many years. This concern was apparent in the enactment of the Elementary and Secondary Education Act of 1965. Specifically, Title I of ESEA was designed to provide financial assistance to local educational agencies for special educational programs in areas having high concentrations of children from low-income families.

The purposes of this study were:

1. To investigate the effectiveness of Title I fund allocation to the states in providing financial assistance to public schools in low-income areas of the United States.
2. To investigate the effectiveness of Title I fund allocation to local public school agencies in providing financial assistance to the poor regions of the state.
3. To investigate recent recommendations for the distribution of federal financial aid to education and analyze the Title I distribution plan.
4. To suggest a revision of the Title I financial plan for the distribution of federal funds to local public school agencies.

Procedure of the Study

Procedures employed in implementing the study were developed in four phases: (a) a review of related professional literature, (b) analysis of the national distribution of Title I funds and the state-local distribution of funds, (c) formulation of a suggested revised hypothetical Title I distribution plan, and (d) application of the federal-state-local hypothetical Title I model in the state of Indiana.

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Examination of the literature on recent recommendations for the distribution of federal financial aid to education was focused on recommendations of committees and authorities rather than on the history of federal aid to education. To understand the political, psychological, financial, and educational implications inherent in the enactment of federal legislation, it was necessary to study the history of the Elementary and Secondary Education Act of 1965.

Title I was evaluated from three perspectives: political-utilitarian, psychological-sociological, and financial-economic. The effectiveness of Title I in providing financial assistance to low-income areas at the national level was examined by comparing a measurement of wealth, state personal income per child of school age, 5-17, with state and regional Title I per-pupil allotment for children of school age, 5-17. Local Title I per-pupil allotment at the local school corporation level was compared with adjusted assessed valuation per child in ADA. A statistical and logical examination of the data was necessary to determine the degree of relationship. Pearson's product-moment coefficient of correlation formula was used to determine the relationship between variables at the national and state-local levels in the statistical analysis. The correlation coefficient, scatterplot, standard deviation, and mean were determined by use of a computer. A visual inspection of the scatterplot indicated the data were rectilinear. In the logical examination, financial data for states and selected Indiana school corporations were listed in tables and analyzed empirically. All 50 states were included in the national analysis, eight income regions in the regional analyses, and 423 Indiana school corporations which received Title I funds in state-local statistical analyses.

The primary sources of data used in this study were: the total state Title I allotments and the number of children allocated to the Indiana school districts as reported by the U.S. Office of Education; per-pupil in ADA; data regarding adjusted assessed valuation, current expenditures, and state support as reported by the Indiana Department of Public Instruction; total personal income as reported by the U.S. Department of Commerce; and an estimate of school-age population (5-17) as reported by the National Education Association, Research Division. All data reported were for the 1965-66 school year.

Although the suggested revision of the Title I allocation formula was in the financial-economic area, the other areas were considered. A model for distributing federal aid to the local school districts within the general structure of the ESEA of 1965 was developed. To examine the utility of the model, a hypothetical program was computed for the state of Indiana, and all school districts which received Title I funds were included.

Assessed valuation of property was used as the measurement of local wealth. In the development of the hypothetical formula, a financial ability index represented the adjusted assessed valuation per pupil in ADA of the local school corporation. The index number assigned to districts with median adjusted assessed valuation per pupil in ADA of the state was 1.00. The index number would inversely increase or decrease by .05 according to the valuation of the local school corporation. The proposed hypothetical Title I formula, which incorporated the index number concept into the existing formula, was:

$$T = N \times E \times I$$

where T = the total Title I hypothetical allocation to the local school district

N = the number of children allocated by the state to the local district

E = the average per-pupil expenditure of the state

I = the assigned index value which corresponds to the adjusted assessed valuation per pupil in ADA of the local school corporation

The hypothetical formula was used in computing the total hypothetical allotments for each Indiana school corporation which received 1965 Title I funds. This proposed program operated within the designated total state money allotments as determined by the U.S. Office of Education. Indiana received $18,378,029 in Title I funds for the 1965-66 school year. The hypothetical program would have utilized $18,046,044. Total Title I allotments for the 423 Indiana school corporations which received Title I funds were compared with the proposed hypothetical total allotments.

Findings, Conclusions, and Recommendations

The major findings and conclusions of the study are:

1. There was a relatively high inverse relationship between state and regional Title I per-pupil allotments and state and regional personal income per child of school age (5-17). The correlation coefficients, −.6433 and −.6387, indicated a substantial negative relationship.

2. There was a low inverse relationship between local school corporation Title I per-pupil allotments and local school corporation adjusted assessed valuation per pupil in ADA. The correlation coefficient, −.1111, exhibited a low negative relationship.

3. The existing Title I distribution plan functioned effectively at the regional and state levels. There appeared to be little relationship between Title I per-pupil money received by local school districts and a measure of local financial ability, adjusted assessed valuation per pupil in ADA. The Title I distribution plan at the local level did not correspond with funds provided by the equalizing Indiana state support program.

4. In the development of a federal financial distribution program, consideration must be given to political, psychological, sociological, financial, and educational implications inherent in the program. Enacted federal legislation has resulted from an interrelationship of these factors.

5. Title I of the Elementary and Secondary Education Act of 1965 effectively provided financial assistance at the state and regional levels. The proposed Title I revision would operate within the designated total state money allocation as set forth by the U.S. Office of Education.

6. Assessed valuation of property was the most important available measure of financial ability at the local level and provided a base for local school support and a measure of ability in the majority of state support programs.

7. The Title I distribution plan did not utilize the equalization principle which is an integral part of the Indiana foundation program. The hypothetical formula involved a ratio of local school corporation ability, the adjusted assessed valuation per pupil in ADA of the local school corporation. A financial ability index representing the adjusted assessed valuation

was incorporated into the present Title I formula.

8. The proposed hypothetical Title I program for distributing money to the local school corporation would tend to equalize the burden of meeting the needs of educationally deprived children along the lines of a foundation program.

The following recommendation is based on the findings and conclusions of this study:

The distribution of Title I funds at the local level should be changed to reflect an inverse relationship between Title I money and the adjusted valuation of property of the local school district.

The Determinants of Educational Effort by Nations

Walter I. Garms, Jr.

WHILE THERE HAS BEEN a good deal of interest in recent years in the contribution of education to economic development, there have been few attempts to examine the determinants of educational effort by nations. To the writer's knowledge, there have been no attempts at a multivariate investigation of such determinants. This study, an initial step into multivariate analysis of educational expenditures by nations, postulated a rationale for the causes of differences in proportion of national income publicly spent for education. The rationale was a model presenting three major factors believed to affect these measures of educational effort. The factors were called ability, expectations, and government. Seven hypotheses were posed regarding effects of these factors upon the dependent variables. All of the hypotheses referred to partial effects; that is, they referred to the effect of the particular factor on the dependent variable, with other factors held constant. Thus, this rationale presented a unified causal model to explain the reasons for variations in the public educational effort of nations.

The first factor was the ability of the nation to support education. The proportion of national income spent for education was hypothesized to increase with total income per capita; that is, as discretionary income increases, a greater proportion may be devoted to such public purposes as education because a lesser proportion is required for subsistence.

The people's expectations for education are reflected in the educational effort of the nation. It was hypothesized that where there are proportionately more children to be educated, effort will be greater. There may be proportionately more children to be educated in one nation than in another either because the one has a larger proportion of its population at the appropriate age for formal education, or because it chooses to educate more broadly, enrolling a large percentage of those who are of eligible age. In another facet of expectations, it was hypothesized that the more highly educated the adults of the population, the more education they will expect for their children, and the more will be the educational effort of the nation. Thirdly, it was hypothesized that urban dwellers expect more education for their children than do rural dwellers, and, therefore, that

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more highly urbanized nations, other things being equal, will make a greater educational effort than less urbanized ones.

Two government factors were here hypothesized as affecting the educational efforts of nations. The first was the extractive capability of the government; that is, its ability to obtain from the population revenues to use for public expenditure of various kinds. It was hypothesized that nations whose governments have higher extractive capability will make a greater public educational effort. The second factor was the classification of governments of nations into three categories: representative, mobilizational, and *status quo*. A nation whose government is broadly representative was presumed to have its educational effort determined primarily by the ability and expectations of the population of the nation. A nation whose government is not broadly representative may have leaders who adopt a mobilizational stance, in which the nation's resources are mobilized to meet what are perceived to be compelling problems of national urgency. On the other hand, the leaders of nonrepresentative government may adopt a *status quo* stance, in which the principal purpose of the government is to preserve the privileged position of a ruling class or clique. It was hypothesized that a nonrepresentative nation whose government has adopted a mobilizational stance will make a greater educational effort, other things being equal, than a nation with a representative government, because the nation's leaders will see education as an important means of achieving their mobilizational ends. On the other hand, it was hypothesized that a nation with a *status quo* government will make less educational effort than a representative nation because the nation's leaders will not be interested in broadly educating a population which might then seize control of the government.

Variables

The rationale proposed a causal model. This study tested a correlational model which was believed to contain variables measuring the factors discussed above. Correlational analysis by itself cannot prove causality, but to the extent that it confirms the predictions of a causal model it strengthens belief in the correctness of that model. The variables used in the correlational analysis were as follows:

1. Dependent variable: public expenditure on education as a percentage of national income (EXP/NI)
2. Ability variables: kilowatt hours of electricity generated per capita (KWH), as a proxy for state of economic development
3. Expectations variables:
    a. Percentage of the population in the 5-19 age group (5-19)
    b. Percentage of the eligible population enrolled in first- and second-level education (ENROLL)
    c. Circulation of daily general-interest newspapers per 1,000 population (NEWS), as a proxy for the level of education of the adult population
    d. Percentage of the population living in cities of over 100,000 (CITIES), as a measure of urbanization
4. Government variables:
    a. General government revenue as a percentage of gross national product (GOV REV), as a measure of extractive capability
    b. Two "dummy" variables, MOBIL and STAT QUO, government attitude factors.

Statistical Analysis

This study was a cross-sectional analysis whose base year was 1963. The sample for the study consisted of 78 nations which had been independent for at least six years prior to the base year, and for which data on all of the variables (except GOV REV) could be obtained. The statistical method used was multiple regression. Regressions were run on all 78 countries, on 49 countries with more than $200 national income per capita, and on 39 countries with less than $300 national income per capita. An additional regression was run on 39 countries for which data on GOV REV could be obtained. Regression coefficients were used to check the hypotheses of the rationale, and residuals of the regression involving all 78 countries were examined for possible hypotheses about unmeasured variables.

Conclusions

The conclusions regarding the hypotheses were as follows:

1. The variables of the rationale (excluding GOV REV) explain 39 percent of the variation in EXP/NI for all 78 countries, 51 percent for the 49 rich countries, and 34 percent for the 39 poor countries. The first two regressions had a high degree of significance (more than .995); the third had a significance of .94.

2. Both an additive and a proportionate regression model were tested. Neither was significantly better than the other in explaining the variation in the dependent variable. The additive model was used in subsequent analyses.

3. The hypothesis that ability, as expressed by KWH, will have a positive partial effect on EXP/NI received significant support for all countries and for those with more than $200 NI, and mild support for the group of countries with less than $300 NI. Other things being equal, countries with high incomes spend a greater percentage of that income on education.

4. The hypothesis that countries with a high percentage of the population of educable age will spend a higher percentage of their income on education, other things being equal, was not supported. The regression coefficient was so small that we could have little confidence that it was actually different from zero.

5. The hypothesis that countries with a high percentage of the eligible population enrolled in school will spend a greater percentage of their national income on education was strongly supported for all 78 countries and for the high-income and low-income countries separately.

6. The hypothesis that the countries with the more highly educated adult population will spend a greater percentage of their national income on education, other things being equal, was not supported. The variable NEWS, used as a proxy for level of adult education, had a negative regression coefficient, particularly strong for the group of poor countries.

7. The hypothesis that the countries with greater urbanization will spend a greater proportion of their income on education was not supported significantly.

8. The hypothesis that there will be a difference in the proportion of national income spent for education among representative, mobilizational, and *status quo* countries was strongly supported for all countries, and for the rich countries separately. It was supported, but less strongly, in the

analysis of the poor countries separately. Regression coefficients indicated that, other things being equal, the educational effort of mobilizational countries is about 25 percent higher than that of representative countries, and the effort of *status quo* countries about 25 percent less than that of representative countries.

9. The hypothesis that countries whose governments have a high extractive power will spend a greater proportion of their national income on education was supported in a separate regression of the 39 countries for which GOV REV data were available. However, these 39 countries were not representative of the total sample, and the conclusion must be limited.

10. Analysis of the residuals of the regression involving all 78 countries disclosed that the regression equation can predict EXP/NI within plus or minus 50 percent for four-fifths of the countries.

In summary, most of the hypotheses of the rationale were strongly supported, but school-age population and urbanization made no independent explanatory contribution, and education of the adult population appeared to work opposite to the expected direction. This latter finding deserves further investigation.

An Analysis of the Relationship of Per-Pupil Expenditure Levels and School Size with North Central Association Evaluations

Daniel B. Horton, Jr.

THE FUTURE AND PROGRESS of a state or the nation depends upon the quality, adequacy, and efficiency of its educational system. New school buildings, mounting enrollments, inflation, and improvement in the quality of the educational programs will require a vast increase in expenditures for education if the schools are to meet the challenges which will face them in the next decade. New dimensions in financing and organizing public schools must be explored in order to receive the maximum benefits possible from every dollar invested. In adopting budgets and making decisions about the organization of our educational system, the public and the profession can be expected to demand increasingly that decision-making bodies be well informed about the choices they must make.

This dilemma was examined by the NEA Committee on Tax Education and School Finance in its publication, *Does Better Education Cost More?* [1] which capsuled opinions as to how progress in education may be achieved. Pursuit of excellence in education should not be based on unsupported opinion, prejudice, and captious controversy. Rather, it must be founded on research, open-minded deliberation, and essential agreement as to the nature of quality in education and the factors which bring it about. In education, as in other areas of public and private endeavor, facts plus careful thinking are superior to opinion as a basis for progress and public support.

The Problem

Studies conducted in other sections of the country have indicated that a direct relationship exists between per-pupil expenditure and size of school when they are compared with the quality of the educational program produced. This study was conducted among the schools of Indiana to see if a similar relationship exists.

The primary objectives of this study were:

1. To determine if the per-pupil expenditure level of a school corporation and the summary evaluations given secondary schools by the North Central Association of Colleges and Secondary Schools are related

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[1] National Education Association, Committee on Tax Education and School Finance. *Does Better Education Cost More?* Washington, D.C.: the Association, 1959. 44 p.

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2. To determine if there is a relationship between the size of those schools included in the study and their per-pupil expenditure level

3. To determine if the size of the schools included in the study interacts with the North Central summary evaluations they receive in relation to the expenditure level of the schools.

Related problems were:

1. To determine the per-pupil expenditures for those schools which have been evaluated by the North Central Association

2. To compute a price level index for each county in the state

3. To determine if the application of the price level index to the per-pupil expenditures significantly changes the data

4. To determine if there is a significant difference in the per-pupil expenditure levels for each account, A through E.

Delimitations of the Study

This study was delimited to high schools with reports on file which had been evaluated by the North Central Association during the 1965-66 or 1966-67 school year. The data used in the study were secured from the North Central Evaluations and the uniform reports made by the various school corporations to the Indiana State Superintendent of Public Instruction.

Expenditure data utilized in this study were delimited to current expenditures for administration, instruction, coordinate activities, operation, maintenance, auxiliary activities, and fixed charges. Other expenditures for fixed charges, coordinate activities, debt service, capital outlay, and withholdings were not included because they do not reflect the day-to-day expenses involved in operating a school and are subject to a large amount of fluctuation. For example, expenditures for capital outlay and debt service tend to fluctuate when new buildings are being constructed or equipped; therefore, they are not a good index of cost. Transportation expenditures are generally directly related to sparsity of population; consequently, a large expenditure for transportation could not be expected to show the quality of educational program of the school when compared with other schools. According to Mort,[2] current expenditures bear a close relationship to total expenditure over a long period of years; thus, when those expenditures above current expenditures are omitted from the study, they are not being completely ignored.

This study treats only those educational quality factors which are associated with the *Evaluative Criteria* used by the North Central Association to evaluate schools. The comprehensiveness of the study is thus delimited in its measurement of educational quality to the degree of comprehensiveness of the *Evaluative Criteria* and the North Central Evaluations.

Limitations of the Study

The data utilized in this study were taken from reports to the Indiana State Superintendent of Public Instruction, and evaluations were made by various North Central Association evaluation committees. Some respondents might interpret and report data differently, and normal human errors may be made in reporting and completing various forms. However, the state reports are checked and evaluated by the State Department, and the evaluation reports are checked and evaluated by the office of the State Chairman of the Indiana State Committee; therefore, glaring errors should be identified.

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[2] Mort, Paul R. "Cost-Quality Relationships in Education." *Problems and Issues in Public School Finance.* New York: National Conference of Professors of Educational Administration, Teachers College, Columbia University, 1952. p. 9-64.

This study was concerned with the level of support for the education system, not with the ability of the corporation to support education or the amount of local effort.

Procedures

Data for this study were obtained from (a) Office of the Indiana State Superintendent of Public Instruction and (b) Office of the Chairman of the Indiana State Committee, Commission on Secondary Schools, North Central Association of Colleges and Secondary Schools.

The computation and statistical analysis of the data collected for the study were performed by the Research Computing Center, Indiana University.

Major steps taken in the collection and analysis of the data for this study were:

1. A price level index for each county in Indiana was computed by deriving and dividing the average salary paid certified school personnel in the state by the average salary paid certified school personnel in each county (for the school year 1965-66). The price level index was used as a measure of the price of commodities consumed by the schools; it was based on personnel salaries since this commodity represents the major portion of school expenditures.

2. Adjusted average per-pupil current expenditures were computed for the five-year period, June 30, 1961, to June 30, 1966, by multiplying the average per-pupil expenditures for each of the 46 schools by the corresponding price level index of the county in which the school corporation is located.

3. Seven one-way analysis-of-variance tests were performed to determine if there was a significant difference in the means of the populations for which the sample of average per-pupil expenditures and the sample of adjusted average per-pupil expenditures represent.

4. A correlation matrix containing 25 columns and 25 rows was computed. The variables were (a) average per-pupil expenditures, (b) total average per-pupil expenditures, (c) average ADA, (d) NCACSS summary evaluations, and (e) average NCACSS summary evaluations.

5. A second correlation matrix identical to the first correlation was also computed; however, the set of data containing adjusted average per-pupil expenditures was substituted for the set of data containing average per-pupil expenditures.

6. A stepwise coefficient of multiple correlation was computed. The dependent variable in the computation was the average of the NCACSS evaluations, and the independent variables were the average per-pupil expenditures.

7. A second stepwise coefficient of multiple correlation was computed duplicating the first; however, adjusted average per-pupil expenditures were used in place of average per-pupil expenditures.

8. Seven two-way factorial experimental designs for the analysis of variance were computed by using average NCACSS evaluations, school size, and average per-pupil expenditure levels as the variables.

9. Step 8 was repeated by substituting adjusted average per-pupil expenditure data for the average per-pupil expenditure data.

Findings

The computed price level index for each of the counties in Indiana ranged from .928 to 1.199. The majority of the indexes were over 1.00. Counties which contained the large metropolitan areas with large numbers of school personnel generally had price level indexes under 1.00. A price level index larger than 1.00 indicated the average county salary was lower than the average state salary, while a price level index under 1.00 indicated the average county salary was higher than the average state salary.

The results of tests of analysis of variance showed that the means of the populations represented by the two samples (average per-pupil expenditures and adjusted average per-pupil expenditures) were not significantly different.

A 25 by 25 correlation matrix which yielded both positive and negative Pearson's correlation coefficients was computed. A positive coefficient indicated a direct relationship, while a negative coefficient indicated an inverse relationship. The correlation matrix yielded the following information:

1. Expenditures for (a) general administration and (b) operation showed a positive relationship with those for each of the other functions.

2. Instruction and maintenance expenditures showed a significant positive relationship.

3. Average daily attendance was significantly related to per-pupil expenditure levels. The relationship was negative and larger for adjusted per-pupil expenditures (especially in the case of instructional expenditures) than for average per-pupil expenditures. The greatest relationship which occurred was the one for ADA and per-pupil expenditures for general administration.

4. Comparison of average NCACSS evaluations with average and adjusted per-pupil expenditures found:

a. No pattern was formed when the coefficients of correlation were secured by multiplying the average per-pupil expenditure data by the price level indexes. Some of the subsequent correlation coefficients were raised and some were lowered.

b. The most consistent pattern of positive correlation coefficients which evolved was the comparison of the NCACSS evaluations for the school staff and administration with each of the expenditure categories. The comparison with the total per-pupil expenditures was the highest in the correlation matrix.

c. One of the highest single pairs of correlation coefficients was found for the comparison of the NCACSS evaluations of school plant with maintenance (E) per-pupil expenditure level-negative coefficients.

d. Of the individual expenditure functions, the column for instruction (B) had the most consistent pattern of correlation coefficients derived from the comparisons with each of the NCACSS evaluations on the various sections of the *Evaluative Criteria.* Most of the coefficients in this column were positive, and coefficients found for the comparison with "school staff and administration" were among the largest.

e. The general trend of the coefficients of correlation was positive when total per-pupil expenditure levels were compared with the various

NCACSS evaluations. Coefficients of .23 and .19 were found when the total per-pupil expenditure levels were compared with the average of the NCACSS evaluations.

5. All but one of the coefficients representing the relationship of the NCACSS evaluations and school size were positive. The highest, .43, was found in the comparison with "program of studies," and the comparison of the average of all the NCACSS evaluations with school size yielded a coefficient of .22. A coefficient of .28 was also derived for the comparison with "student activity program" and .27 for the comparison with "instructional materials."

Coefficients of multiple correlation were computed by using the average NCACSS evaluations as the dependent variable and the per-pupil expenditure levels as the independent variables. The computed multiple correlation coefficients were .38 and .34, but the application of the F test to these coefficients did not show them to be significantly different from zero. The coefficients of multiple determination (square of coefficient of multiple correlation) indicated that 14.5 percent of the variation in the NCACSS evaluations can be accounted for by the average per-pupil expenditures. Adjusted average per-pupil expenditures accounted for 11.9 percent of the variation in the evaluations.

The data were also analyzed by using two-way classification tests of variance. The results of these tests were:

1. Significant relationships were found between the average NCACSS evaluations and the per-pupil expenditures for (a) operation and (b) total per-pupil expenditures.

2. Significant relationships were found between school size and adjusted average per-pupil expenditures for (a) general administration, (b) instruction, (c) coordinate activities, (d) fixed charges, and (e) total average per-pupil expenditures.

3. School size and average per-pupil expenditure showed significant relationships for (a) general administration, (b) coordinate activities, (c) fixed charges, and (d) total average per-pupil expenditures.

4. The only per-pupil expenditure function which was shown to be related significantly to an interaction of school size and NCACSS evaluations was function C—coordinate activities.

Conclusions

The following conclusions were drawn from an analysis of the findings:

1. Size of school had a significant effect upon the quality of educational program provided by the school. Large schools were accompanied by a high quality educational program, especially as reflected in their "program of studies" (organization, curriculum development procedures, subject offerings, general outcomes).

2. The "economy of scale" principle was shown to exist in Indiana school systems. An increase in the size of school resulted in a corresponding decrease in the level of expenditure per pupil. This relationship was fortified when per-pupil expenditures were adjusted by using the computed price level index.

3. The per-pupil expenditure level of a school had a low, positive effect on the over-all quality of the educational program provided by a school. Taken separately a greater relation-

ship tended to evolve between the quality of school staff and administration with per-pupil expenditure levels, especially those expenditures for instruction.

4. Basically no interaction was found between school size and per-pupil expenditure level in determining the quality of educational program provided. An increase in (a) size of school, (b) per-pupil expenditure level, or (c) both size of school and per-pupil expenditure level could be expected to result in an increase in the quality of the school.

Recommendations

Based on the findings and conclusions of the study, the following recommendations are made:

1. Increased efforts should be made to convince people living in small (in some cases unreorganized) school districts that larger schools can be expected to provide their children with a better education at a smaller cost. The Indiana State Department of Public Instruction should take the initiative in completing the reorganization task in those areas where local efforts have bogged down.

2. Higher salaries for school personnel in particular, and a higher level of support for schools in general, should be a major objective of both the profession and the lay public.

3. A study should be made in Indiana schools to determine what factors other than size and per-pupil expenditures are important in the general determination of the quality of the school program. Curricular innovations, community interest and aspiration level, other community institutions, ability of instructional staff, school facilities, and assessed evaluation are but a few examples of the types of factors worthy of consideration.

4. A study should be made to determine how accurately the NCACSS evaluations rate one school's "quality" in comparison with other schools.

The Development of Mathematical Models for the Allocation of School Funds in Relation to School Quality

Joseph A. Igoe

ALTHOUGH THEY may have recognized the problem, previous studies relating educational costs to some measure of educational quality have not dealt with the allocation problem, that is, how to spend the educational dollar in order to achieve the most educational quality.

In 1958, Ross summarized the research in educational finance conducted by the Institute of Administrative Research and stated that the most powerful of all factors which influence the quality of the schools is the level of financial support. He concluded that the amount spent per pupil is the best predictor of adaptability, that is, adoption of educational innovations. Adaptability was used as the measure of school quality in many of the studies conducted by the Teachers College, Columbia, Institute of Administrative Research. The studies of Mort, Vincent, Woollatt, and others found that per-pupil expenditure level correlated positively with school quality.

Moehlman and Martin approached the allocation problem by developing percentage standards for the various school budget categories, but they did not relate the percentages to any measure of quality.

Studies and reports within the past decade have seen the importance of investigating beneath the expenditure level and getting at the problem of how to spend the educational dollar to obtain the highest educational quality. In 1957-1959 the Quality Measurement Project of the New York State Education Department in a study of 100 school systems attempted to develop techniques for assessing quality of education. The Project concluded that school expenditure is positively related to school system effectiveness but with the inference that it is judicious expenditure, not just additional expenditure, that is related to effectiveness.

Burkhead saw the task as securing a larger educational output from a given amount of resource input. Project Talent saw the question as how best to maximize the amount of learning obtained per dollar.

The Problem

This study stretched beyond previous research in that it squarely faced the allocation problem. The objec-

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tives of the study were to analyze the relationship between financial input to school systems and a measure of output, school-effected pupil achievement; and to develop mathematical models of these relationships as guides for the allocation of school funds.

Procedures

Fifty school systems of the 100 in the sample of the Quality Measurement Project were used as the sample in this study. The 50 school systems were in communities rated as 3 or 4 by the Quality Measurement Project, on a 1 through 5 scale, with 1 being high socioeconomic communities and 5 being low socioeconomic communities. The selection of the 3 and 4 rated communities eliminated communities with a narrow socioeconomic range from this study.

The budgets of the 50 school systems in the sample were obtained for the 1959-60 school year from the New York State Education Department. Each budget was broken down into 15 components that were used as the independent variables. These 15 independent variables were:

1. General control/WADA
2. Supervision and administrative/WADA
3. Teacher attraction cost/WADA
4. Supplementary numerical staffing adequacy/WADA
5. Teacher training/WADA
6. Teacher experience/WADA
7. Textbooks/WADA
8. Supplies used in instruction/WADA
9. Miscellaneous instructional expense/WADA
10. Operation of plant/WADA
11. Maintenance of plant/WADA
12. Library/WADA
13. Psychological and guidance service/WADA
14. Other auxiliary services/WADA
15. Debt service and capital outlay/WADA

The 15 financial variables for each school system add up to the total expenditure per WADA less the basic cost of teachers' salaries per WADA. The basic cost of teachers' salaries is $4,000 multiplied by the number of teachers needed to maintain a 23:1 pupil-teacher ratio, and divided by WADA. This amount was subtracted from the expenditures because it was deemed nondiscretionary. If a school board is to maintain a school system, it needs at least a certain number of teachers at the state mandated minimum salary level. The school board has little choice of allocation over the expenditures for basic teacher salary costs.

Independent variables #3, 4, 5, and 6 represent a refinement of the commonly used variable of teachers' salaries per WADA, less the basic cost of teachers' salaries explained in the previous paragraph. Expenditures for teachers' salaries involve a choice among alternative strategies. These four variables represent four common allocations of teacher salary expenditures. Teacher attraction represents the attractiveness of a school district's starting salary and is the difference between the district's starting salary and the New York State mandated minimum starting salary of $4,000.

Supplementary numerical staffing adequacy places a cost figure on a school district's teacher staffing ratio. Smaller class size means more teachers and thus more salary costs. Based on the number of pupils and number of teachers in public schools in New

York State in 1959-60, the average pupil-teacher ratio was 23:1. As this ratio increased in a given school district, the school district was in a sense saving money; as the ratio decreased, the school district was spending more money than the average. The computation of this variable required that the theoretical number of teachers needed (i.e., to maintain a 23:1 ratio) be subtracted from the actual number of teachers employed in the school district. This number of extra teachers was multiplied by $4,000 and the product divided by WADA. This variable can have a negative value if the actual number of teachers employed is less than the theoretical number of teachers.

Teacher training represents the cost to a school district of providing salary increments for additional educational training. On the typical New York State school district teacher salary schedule it represents movement horizontally.

Teacher experience represents the cost to a school district of providing salary increments for additional teaching experience. On the typical New York State school district teacher salary schedule it represents vertical movement.

These four variables, teacher attraction, supplementary numerical staffing adequacy, teacher training, and teacher experience, provide a method of getting at the allocation involved in teacher salary costs. The allocation categories used have commonly been recognized as being interdependent. This study looked at all four allocation categories at the same time.

The 11 other independent variables represent expenditures in categories that are used in budget reporting to the New York State Education Department.

Four dependent variables developed for each school system in the sample, were measures of a school system's effectiveness with each of three socioeconomic levels of pupils as well as a composite measure. The Quality Measurement Project of the New York State Education Department furnished the composite score on the *Iowa Test of Basic Skills* or the *Iowa Test of Educational Development* as well as a socioeconomic rating for students in grades 6, 9, and 12 in the 50 schools in this sample. The Iowa Test scores were grouped into three socioeconomic levels (high, medium, low), and by grade level (6, 9, 12). Means were found for each socioeconomic level for each grade level. The average score for each socioeconomic level for each grade level was subtracted from the mean to produce nine residual scores per school district. These residual scores were standardized and then weighted according to the number of students at each socioeconomic level. This procedure produced three scores per school district, one for each socioeconomic level. Appropriate weighting of the scores produced a composite score for each school district.

These four scores are the dependent variables of this study. They represent school quality scores with the students' socioeconomic status held constant. They are a measure of students' school-effected achievement with allowance made for the socioeconomic level of the student. These four dependent variables are numbered and named as follows:

16. High SE Quality
17. Medium SE Quality
18. Low SE Quality
19. Composite Quality

Zero order correlations were found between the variables as well as multiple correlations between the independent variables and each of the dependent variables. Scattergrams were plotted of each independent variable and each dependent variable. The scattergrams provided a visual test of linearity of the relationship between each independent variable and the dependent variables.

The 15 independent variables and, in turn, each of the four dependent variables were subjected to multiple linear regression. This procedure produced four equations that constituted the linear mathematical model developed in this study.

In order to improve the fit of the relationship between the independent and the dependent variables, two other mathematical models were developed. One model was developed through a multiple regression after variables #1, 3, 4, 5, 7, and 11 were transgenerated into their square root. The other model was developed through a multiple regression after the transgeneration of selected variables into their square root or logarithm to the base 10.

Findings

1. School system financial inputs that represent the discretionary expenditures can be related to a measure of school quality, and an analysis can be made of the relationship of the expenditures to school-effected pupil achievement for three socioeconomic levels of students.

2. The school systems in this sample show uneven effectiveness with the three socioeconomic levels of students. Ranking relatively high in effectiveness with high socioeconomic students is no guarantee of high rank in effectiveness with low socioeconomic students.

3. The pattern of correlations of the independent variable with the dependent variables varies with each dependent variable, i.e., with each socioeconomic level. The independent variables generally correlate positively with the high socioeconomic quality variable, but correlate negatively with medium socioeconomic quality and with low socioeconomic quality. This finding suggests that the allocation of the school dollar is biased for the high socioeconomic student to the detriment of the medium and low socioeconomic student.

4. Teacher attraction cost has the highest correlation of any of the independent variables with the dependent variables—.308 with high socioeconomic quality. The negative correlations of this variable with medium socioeconomic quality and low socioeconomic quality suggests that teachers who are effective with medium and low socioeconomic students are not attracted by high salaries.

5. General control, a figure that is composed largely of central-office administrative salaries, is the only independent variable that correlates positively with all four dependent variables.

6. Library expenses have a correlation of .290 with high socioeconomic quality, but have a negative correlation with medium and low socioeconomic quality. This suggests the possibility that public-school library expenditures are of doubtful benefit to medium and low socioeconomic status students under present educational arrangements. Some might contend that library expenditures reflect an orientation of concern for the verbal and college-bound student.

7. The mathematical models developed by means of multiple regression were statistically nonsignificant. Even with transgeneration of the variables into their square root or logarithm, the models remained statistically nonsignificant.

Only one of the 12 mathematical models developed in this study is reported here. The model stems from the multiple linear regression of 15 independent financial variables and the dependent variable, high socioeconomic quality. The equation of this model is as follows:

$$\begin{gathered}Y=(2.53505)X_1+(-0.15464)X_2+\\(2.24834)X_3+(1.53119)X_4+\\(2.86116)X_5+(0.04688)X_6+\\(0.82930)X_7+(0.01196)X_8+\\(-0.05411)X_9+(-0.0290)X_{10}+\\(-1.38246)X_{11}+(0.75724)X_{12}+\\(0.31154)X_{13}+(-0.16916)X_{14}+\\(-0.03778)X_{15}+52.87241\end{gathered}$$

In the equation above, the X_1 to X_{15} represent the 15 independent variables as defined in the study and Y represents the value of the High SE Quality variable that can be predicted by the equation.

Conclusion

This study attempted to get beneath expenditure level per pupil and look at the allocation of school funds in relation to a quality score for three different socioeconomic levels of students. The study has pointed out the need for more refined research in several of the areas touched upon by this study.

A single measure of quality for a school system, without regard to student input, such as intelligence quotient or socioeconomic status, is of doubtful value. School systems cannot claim quality if their measure of quality is merely a reflection of student input. School quality scores should be refined measures of quality, whether or not the measure is as gross as expenditure level per pupil or some measure of student achievement.

The allocation of school funds in relation to school quality is by no means solved by this study. A beginning has been made which may point out new directions for additional research. Financial inputs to school systems can be related to some measure of school output. The inputs and the outputs bear further examination, and the relationship may need more sophisticated analysis than that used in this study.

The difference in the correlation of the financial variables with various socioeconomic level quality scores points to the need for a cost-quality analysis of specific educational programs designed for each socioeconomic level. The independent variables used in this study need to be studied to find appropriate groupings to reduce the number. The sample size should be increased, and a larger geographic area should be used.

A Study of the Components of the Property Tax Base in Oregon School Districts

James Rose

MOST STATE SCHOOL aid apportionment formulas rely on measures of local fiscal capacity and educational need. This is true in Oregon where local school district fiscal capacity is measured by the true cash value of *all taxable component properties* and local educational need is measured by a pupil unit, *resident average daily membership*.

However, the local property tax base is a collection of types of property which may or may not be related to pupils or educational need. Relating this summed valuation of the local property tax base to pupils results in fiscal ability differences between and among local school districts. These extreme differences are cause for concern in the apportionment of state school funds to satisfy state and local goals of tax and educational equity.

This study examined relationships between component property valuations and pupil membership in 71 Oregon school districts as they existed during the 1965-66 fiscal and/or school year.[1] One purpose of the study was to order property components according to these relationships for introduction into a hypothetical state school apportionment formula as substitute measures of local fiscal capacity. A second purpose was to measure changes in state aid apportionment criteria, if any, that resulted from the use of these alternative measures of local component property wealth, or fiscal capacity.

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Research Procedures

Nine property wealth valuation measures were recorded for 71 Oregon school districts. The sole criterion for selection of the component property wealth measures and the school districts for study was availability of data. The 71 school districts[2] selected for study comprised about 33 percent of the state population. They were representative of the total population on seven sociological, economic, and demographic measures.

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[1] The study of educational need and fiscal capacity relationships in the 36 Oregon counties, part of the doctoral dissertation, is not included in this report.

[2] Originally, 107 school districts were identified. By merging union high and component elementary districts, the sample was reduced to 71 unified districts.

The nine components representing true cash valuation (T.C.V.) of land and improvements[3] were:

1. Residential property (real)
2. Commercial property (real)
3. Industrial property (real)
4. Farm property (real)
5. Miscellaneous property: range, recreation, and timber (real)
6. Personal property (personal)
7. Utility property (utility)
8. Total real property (redundant measure: sum of V1, V2, V3, V4, V5)
9. Total property (redundant measure: sum of V6, V7, V8)

School district valuations were generated by collecting 197,000 IBM cards, each containing a specific property valuation, location, and type classification.[4] The nine property wealth measures collected per tax code area were equalized to true cash value. Tax code area valuations were grouped and summed by school district area. The computer program, designed for this operation, compared summed valuations with known school district total valuations.

D1, resident average daily membership, formed the dependent variable in the study. As a first step in determining relationships, a 10 by 10 correlation matrix for the nine measures and the dependent variable, with means, standard deviations, and Pearson product-moment coefficients of correlation was computed.

Multiple regression techniques were used for correlation analysis, and relative variability was measured by the coefficient of relative variability, C.[5]

Apportionment Analysis Procedures

A computer program distributed state school aid according to the existing Oregon state distribution ratio of 80 percent flat grant and 20 percent special purpose equalization grants.[6] As a check on the influences of these distribution variables, total special purpose and total flat grant distributions were made. The rate of state nonproperty tax support was set at 50 percent, and the foundation program level was established at $600 per pupil. A key feature of the program was the introduction of state property tax flat grant apportionment. When local property components were redefined as a state taxed resource, the proceeds of a uniform tax rate on these components were apportioned as flat grants.

The uniform tax rate on state defined property wealth was equivalent to the mathematically determined local contribution rate which was 10.6 mills/T.C.V.

The state aid apportionment measurement data used were derived from state school aid purposes and were developed by Farner[7] (pages 122-23).

Results of the Study

As expected, component property valuations and pupil membership measures were extremely variable. As shown in Table 1, the standard devia-

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[3] Property type classification system and definitions used by the Oregon State Tax Commission were accepted for this study.

[4] Oregon State Tax Commission, Salem, Oregon.

[5] $\sigma \div x$.

[6] Distribution formula was: $600 × RADM = flat grants + local contribution + corrections + state property tax flat grant + equalization (where equalization is less than 0, equalization = 0).

[7] Frank Farner, Professor of Education, Associate Dean of the Graduate School, University of Oregon, Eugene, Oregon.

TABLE 1.—MEANS AND STANDARD DEVIATIONS OF 10 SCHOOL DISTRICT PROPERTY WEALTH AND PUPIL MEMBERSHIP VARIABLES
N=71

Variable	Mean	Standard deviation
D_1 Resident average daily membership	1,577.2	2,943.4
D_2 Personal property, T.C.V.	$ 5,400,879.0	$ 8,558,896.5
D_3 Utility property, T.C.V.	5,417,772.1	9,895,048.2
D_4 Real property, T.C.V.	33,812,222.0	62,387,758.0
D_5 Residential property, T.C.V.	13,833,762.0	39,368,263.0
D_6 Commercial property, T.C.V.	4,712,530.5	14,126,298.0
D_7 Industrial property, T.C.V.	3,874,780.2	10,396,331.0
D_8 Farm property, T.C.V.	5,206,488.3	8,544,097.0
D_9 Miscellaneous property, T.C.V.	6,182,679.5	9,408,974.0
D_{10} Total property, T.C.V.	44,630,888.0	75,862,799.0

tions of each of the variables exceeded the means.

The correlations between educational need and component property wealth measures were tested for significance at the 1 percent level of confidence.

Residential property, as a discrete measure, was most closely related to pupils, and farm property, T.C.V., was the only component unrelated to pupil membership. The zero-order correlations and inter-correlations between pairs of variables are shown in Table 2.

Excluding the two redundant property measures of *total real property, T.C.V.*, (V4), and *total property, T.C.V.*, (V10), seven property wealth measures were ranked according to pupil relationships. This ranking of components served as a basis for successively introducing accumulations of components' property wealth into a state school aid apportionment formula as alternative measures of both

TABLE 2.—INTERCORRELATIONS BETWEEN 10 VARIABLES RELATED TO FISCAL CAPACITY AND EDUCATIONAL NEED IN 71 OREGON SCHOOL DISTRICTS

Variables	2	3	4	5	6	7	8	9	10
1. R.A.D.M.	.936*	.493*	.984*	.962*	.950*	.564*	.102	.359*	.977*
2. Personal, T.C.V.		.530	.959	.905	.905	.539	.248	.392	.968
3. Utility, T.C.V.			.491	.427	.462	.298	.226	.113	.593
4. Real, T.C.V.**				.963	.956	.536	.195	.391	.992
5. Residential, T.C.V.					.994	.377	.063	.236	.951
6. Commercial, T.C.V.						.369	.064	.215	.947
7. Industrial, T.C.V.							.047	.276	.539
8. Farm, T.C.V.								—.022	.218
9. Miscellaneous, T.C.V.									.380
10. Total property, T.C.V.**									

* Significant at the .01 level of confidence, where α .01, 69 df., ± .302.
** Redundant measures.

TABLE 3.—SCHOOL DISTRICT COMPONENT PROPERTY, TRUE CASH VALUE, AND PERCENT OF TOTAL TRUE CASH VALUE; ACCUMULATED COMPONENTS' TRUE CASH VALUE AND PERCENT OF TOTAL, 1965-66
N=71

Component	True cash value	Percent of total	Accumulated true cash value	Percent of total	Computer run
Residential	$ 982,197,435	31.0%	$ 982,197,435	31.0%	A
Commercial	334,589,903	10.6	1,316,787,338	41.6	B
Personal	383,463,721	12.0	1,700,251,059	53.6	C
Industrial	275,109,549	8.7	1,975,360,608	62.3	D
Utility	384,662,137	12.1	2,360,022,745	74.4	E
Miscellaneous ...	438,970,482	13.9	2,798,993,227	88.3	F
Farm	369,660,857	11.7	3,168,654,084	100.0	G (TTCV)
Total	$3,168,654,084	100.0%			

local fiscal capacity and state property tax resources.

The order of introduction, components' wealth, and accumulated components' wealth in dollar amounts and as a percentage of total wealth are shown in Table 3.

The point at which the systematic introduction of component property wealth, as alternative measures of local fiscal capacity, accounted for most of the total variance in pupil membership with the least relative variability occurred with a local property tax base comprised of residential, commercial, personal, and industrial property (T.C.V.). The successive additions of utility, miscellaneous, and farm property accounted for only an additional 0.4 percent of total variance and generated high variability scores.

The systematic introduction of the seven property component valuations into the hypothetical state aid apportionment formula produced marked changes in the established apportionment criteria.

This study focused on the criteria changes occurring under an assumed state aid flat grant and special purpose equalization distribution of 80-20 percent. However, alternative total flat grant and total special purpose equalization distributions produced changes in the same direction, but to different degrees. As a matter of interest, a total special purpose equalization distribution with a local property tax base comprised of a residential, commercial, personal, and industrial property valuations best satisfied the apportionment criteria, i.e., no variation in mean local millage levies, no negative equalization aid, and a minimum amount of state aid required to implement the formula.

Under an 80-20 percent distribution plan, two "criteria satisfaction" points were identified. Local property tax bases of residential property at T.C.V., and/or a combination of residential, commercial, personal, and industrial property, at T.C.V., resulted in greater criteria satisfaction. These two alternative bases were predictable from the relationship and variability data in Table 4. Both bases accounted for a high degree of total variance in pupil membership, and both local bases generated low relative variability scores.

Figure I graphically presents the criteria measurement changes. Of in-

Figure I.

School district measurement criteria changes, N=71
80-20% distribution.

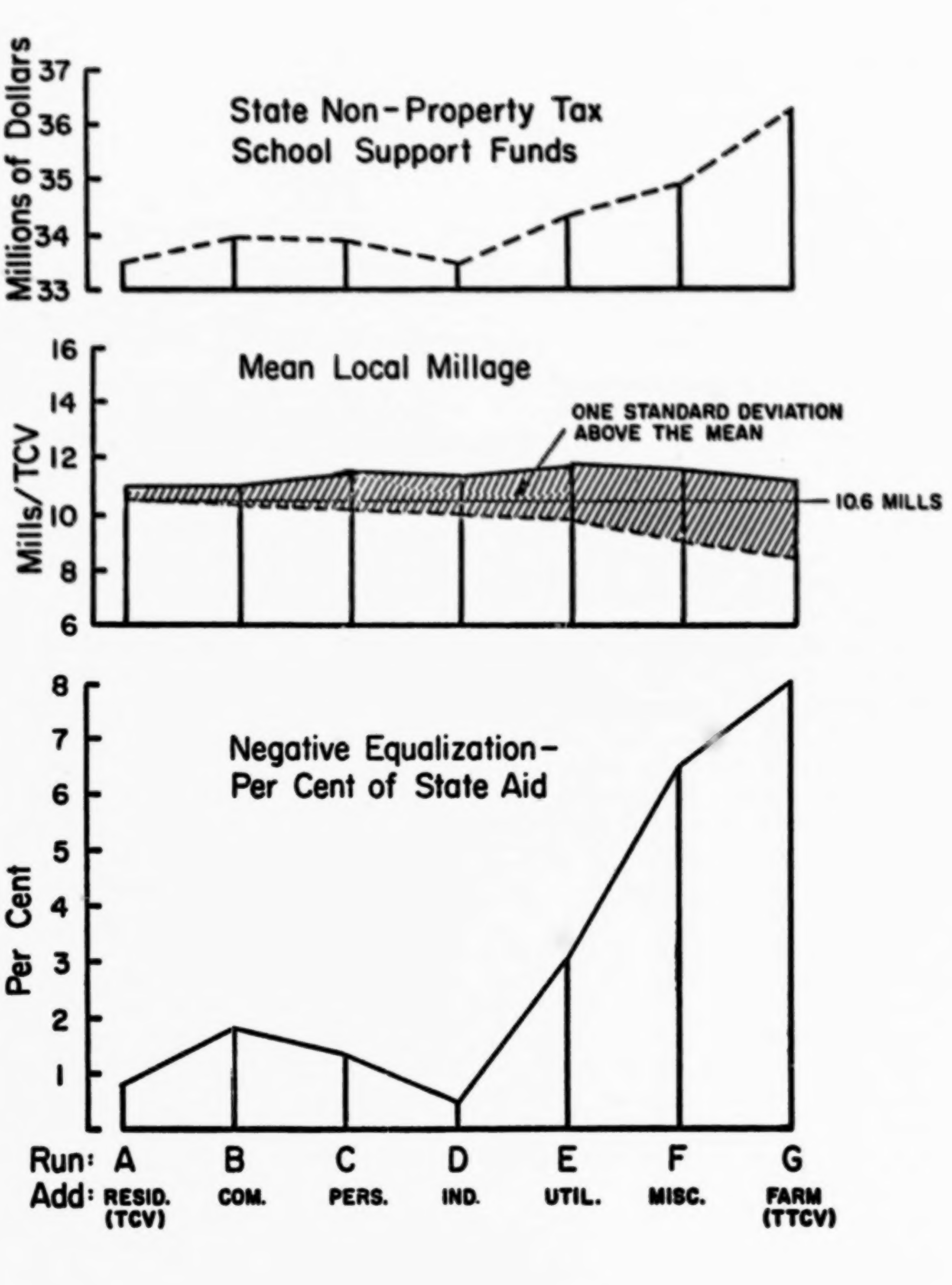

TABLE 4.—PERCENT OF TOTAL VARIANCE IN PUPIL MEMBERSHIP EXPLAINED BY THE SYSTEMIC ADDITION OF PROPERTY WEALTH MEASURES AND THE RELATIVE VARIABILITY OF EACH NEWLY COMPUTED PROPERTY WEALTH-PUPIL MEMBERSHIP MEASURE
N=71

Run identification	Property component	Multiple R	R^2	Accumulated change (R)	Relative variation (C)	Accumulated change (C)
A	Residential	.962	92.5%	. . .	75.0%	. . .
Add: B	Commercial	.964	92.9	+0.4%	70.5	− 4.5%
C	Personal	.978	95.6	+3.1	84.2	+ 9.2
D	Industrial	.990	98.0	+5.5	75.6	+ 0.6
E	Utility	.990	98.0	+5.5	121.7	+46.7
F	Miscellaneous	.992	98.4	+5.9	112.8	+37.8
(TTCV) G	Farm	.992	98.4	+5.9	100.8	+25.8

terest is the relationship between the hypothetical required local contribution rate of 10.6 mills/T.C.V. and mean local millage levies. As this relationship deteriorates, greater negative equalization aid occurs, and larger amounts of state aid are required.

The fluctuation in state aid requirements was due to changes in equalization aid requirements. Larger amounts of state aid are required to replace revenues lost by relative under-utilization of component property wealth. In this respect, state equalization aid was a device by which taxes on certain property components were shifted to the state general fund, and presumably to the income tax base.

Conclusions

The findings focus attention on the policy of separating state and local tax bases, where the general property tax base is regarded as a local resource. The use of the general property tax base valuation as a measure of local fiscal capacity in support of a defined state foundation program resulted in both the inefficient use of scarce state resources, both general fund and property resources, and local tax inequities. Redefinition of property tax base components as state and local resources in support of public school education resulted in greater tax equity and the more efficient utilization of resources, according to the criteria used.

State school aid, in conjunction with local fiscal capacity measured by the general property tax base, becomes to a certain extent a subsidy to offset the under-utilization of certain property tax base components.

The possibility exists that personal income and component property wealth relationships are somewhat in the same order as the pupil-component property relationships. If so, a realignment of state and local property tax bases according to pupil relationships would result in a more precise relationship between educational need and fiscal capacity, while at the same time, giving local districts a tax base somewhat more responsive to educational demand.

A Taxonomic Analysis of the Budget-Making Structure of a Large City School District in the Western United States

H. Gerard Rowe, Jr.

IN HIS PROPOSAL to analyze the great variations in educational expenditures of the large American cities James stated his hypothesis as follows:

> If factors of demand for education and factors of financial ability to pay for education are held constant among school districts, then variations in the organizational structure for financing education will be associated with variations in educational expenditures.[1]

In connection with James' study the writer investigated one of these organizational variations, the budget-making structure of a large unified city school district in western United States. After a number of interviews with key personnel in the district, it became apparent that decisions regarding the budget were being made by nine top administrators.[2] The administrative unit made up of these administrators, designated as "budget specialists" by the writer, became the structure under study.

A method of investigating this structure in a broad context seemed essential in order to get at broad questions such as these: What are the budget specialists' purposes? What functions do they perform? What resources are available to the district? How are these resources distributed? These and similar questions also pointed to the need for a method of analysis of the factors involved in the budget-making *functions* as performed by the budget specialists.

After reviewing the literature for possible techniques of investigation, the writer, with the concurrence of James, concluded that a promising approach was provided by Cowley's "Holistic Taxonomy for the Study of Social Institutions" which provides for the systematic study of the structure, functions, and other characteristics of higher educational institutions. It was used by Guerrero in a study of Columbia University and by Charles U. Walker in a similar study of Stanford University, dissertations completed at Stanford in 1964.

The writer employed Cowley's taxonomy to systematically study the

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[1] James, H. Thomas. *Determinants of Educational Expenditures in Large Cities of the United States.* Unpublished Proposal to the U.S. Office of Education, 1963. p. 1.

[2] The superintendent, the legal advisor, the president of the local junior college, the chief of division of fiscal control, and five assistant superintendents.

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budget specialists as they prepared and administered the budget in a large city school district. Data were derived from the detailed observation of board meetings, public hearings, interviews with key personnel within the school district, and from several agencies in the city, as well as from the careful scrutiny of hundreds of publications and unpublished documents from the school district and city agencies.

Each of these sources was analyzed by means of Cowley's "workbook method," which allows generalizations and facts to emerge from collected data, provides cross-referencing, and allows an investigator systematic access to the facts which have been gathered.

Description of the Taxonomy

For a number of years, Cowley has advocated a holistic approach to the study of the structures and functions of educational institutions. This conviction led to the gradual evolvement of the following brief statement:

> An educational institution is like a snake: touch it at any spot, and it wiggles all over. Stated differently, everything about a social institution influences everything else about it; and hence understanding any single characteristic comprehensively requires that it be seen in relationship to related characteristics and, indeed, to the entire educational complex.[3]

This paper will introduce the Cowley taxonomy, define the individual taxons, summarize the major findings of the study as they relate to each taxon, and look at the problems that the budget specialists face in each taxonomic area.

The Taxonomic Analysis

The taxonomy rests upon two fundamental ideas: first, that a social institution is a *structure,* and second, that essentially any structure (whether it is a social institution, a person, or a machine) can be understood best by assessing what it *does,* that is, by its *functions* or characteristic activities.

Structure and function comprise the primary duad or "axial taxons." All other components or taxons revolve about the axial taxons undergirded by the axiom that "*only structures can perform functions,* or more succinctly, *no structure; no function.*"[4]

1. Structure

A *structure* may be defined as an entity, "natural or manmade be it a boulder, a community, or a metagalaxy."[5] The arrangement of substructures, such as divisions, schools, and departments, constitutes the arrangement of a social institution. The nine key administrators in the school district were designated as the budget specialists because of their major role in preparing and administering the budget. These administrators are joined from time to time by department heads, supervisors, and directors in making budgetary decisions, but basically the superintendent and the eight other key officers have the greatest internal influence over the contents of the budget document.

2. Function

A *function* is defined as the characteristic activity of a structure or of any of its substructures. The diverse activities performed by complex social structures are categorized under three headings: core, complementary, and continuity functions. They are described as follows:

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[3] Cowley, W. H. *A Tentative Holistic Taxonomy Applied to Education.* Address given April 18, 1962.

[4] *Ibid.*

[5] *Ibid.*

Core functions are defined as activities which the structure exists primarily to perform. The core function which the budget specialists exist to perform is the allocation of fiscal resources.

Complementary functions are defined as the activities in which a structure engages to enhance its core functions. Two examples of complementary functions in the present study are (a) the cooperation function of the budget specialists with agencies of the city and county government and (b) the communication function of the budget specialists as they communicate regarding fiscal matters with each other and with their clientele, i.e., the school district employees and the board of education.

Continuity functions are defined as the activities which a structure undertakes in order to continue the school district operation, the component parts under the budget specialist's supervision (such as the City College or the Elementary Division) as well as their own substructure which has been designated as the budget specialists. Therefore, their core function and their continuity functions reinforce each other.

Problems—source and impact—Since the budget specialists are the key administrators with ultimate responsibilities which affect the entire school district operation, concern for the budget pervades all decisions regarding the educational program. For example, a specialist who was concerned about lack of modern equipment for training students in typing and accounting decided not to ask for new machines because of his sensitivity to the need to hold down the tax rate. Thus, decisions regarding expenditures are constantly checked against the perception of what the taxpayer will tolerate.

3. Purposes

Findings—The major purpose (defined as "an intention to act") of the budget specialists was described as follows by the superintendent:

> The proposed budget . . . should represent our combined best thinking and recommendations for a high quality and efficient school program at a cost which can be justified by the results accomplished without excessive burden on the taxpayer.

Two major elements included in the statement of purpose offer a continuous challenge to the budget specialists. They purpose to develop a budget which will permit a high quality and efficient school program without placing an excessive burden on the property taxpayer. They are placed in the position of the guest in a home who is asked, "What'll you have to drink?" He may desire champagne, but after sizing up the host and his environment says, "I'll have a beer."

Of course, the challenge facing the budget specialists is a great deal more complex than this. When the citizens of the city ask, "What kind of schooling do you plan to have for our children?" the budget specialist is subjected to all kinds of advice. It comes from the board of education, the teachers and administrators, the taxpayers associations, the minority groups, the mayor's office. The advice ranges from "give them the best" to "do the best you can but keep the taxes down."

Problems—source and impact—The specialists have purposed to develop a budget permitting a high quality, efficient school program without placing too great a burden on the taxpayer. If the budget specialists concentrated their efforts on the first of these purposes, budgeting for a high-quality program, the second of these purposes could be assumed by the board of education and/or the electorate, who could then judge whether the cost of a proposed program constituted an excessive burden. Because of their extreme concern for the taxpayer, the specialists did not recommend that the board levy voter-authorized tax rates which would have yielded from $2.7 million to $8.3 million more annual revenue in the years between 1954 and 1964.

4. Values

Findings—A *value* is defined as "an attitude of a human individual or a group at a given point in time and space about the worth of any . . . entity."[6] The values explored were efficiency, uniformity, stability, consideration for the taxpayer, and concern for the adequate compensation of staff. Each of these values contributes to shaping the formula employed by the specialists.

Schedules M and N, the two major components of the formula prescribe the allocation of instructional supplies and the assignment of certificated personnel to schools. They were created to establish a climate in which rational decisions could be made on the basis of a uniform pattern.

Problems—source and impact—The formula has become the decision-making tool affecting over 86 percent of the budget. The use of such a tool is characteristic of large school districts. Used as a base from which variations could be encouraged, the formula could simplify the routine decisions made each year. Freed from having to go through the same motions year after year, the specialists, teaming with principals, department heads, and teachers, could devote more time to planning pilot projects to test innovative ideas. This would contrast with present practice, but the values of efficiency and uniformity appear to be so ingrained in the budget specialists that most attempts by other administrators and teachers to circumvent or alter the formula have been met with great resistance.

5. Temporal Continuity

Findings—The concept of temporal continuity rests upon the axiom that "every 'thing' in the universe exists in a past-present-future continuum; that the past, present and future interblend, although they can usually be distinguished from one another."[7] The city's schools came into being in 1848, and since that time a group of individuals has prepared and administered the budget document, which has been a formative force in shaping the public schools today.

Problems—source and impact—The history of the district and its budget-making indicates that support for the public schools has met with a general resistance out of proportion to the substantial resources available. This was a finding of a major study done in 1917 and was particularly true from 1954 to 1964. This resistance has come from external sources as well as from internal controls and will be explored further.

6. Spatial Continuity

Findings—This taxon deals with the environment of the specialists,

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[6] Cowley, W. H. *A Holistic Overview of American Colleges and Universities*. Stanford, Calif.: Stanford University, 1965. p. 85.

[7] Cowley, W. H. *Course Outline*. Ann Arbor, University of Michigan, Summer 1964. p. 2.

"the space and all its contents which encircle any given entity at any point in time." [8]

The *commuter* represents one of the most powerful environmental controls. Many wealthy businessmen live outside the city in suburbs where their children and their neighbors' children attend school. The property taxes which their corporations pay account for a substantial amount of the revenue.

These and other corporations have banded together to form the Municipal Conference. Its core function is to keep the total taxes paid by the group within a range acceptable to the group.

Problems—source and impact—Of the external influences on the specialists to keep the tax rate low, none has been more powerful than the municipal conference. This group, which controls the wealth of the city, advises the board of education on the tax rate and undoubtedly plays a powerful role in advising the mayor in the selection of board members.

The trickling away of the middle-class Caucasian and his replacement by the nonwhite has brought new problems to the budget specialists, for the cost of educating these newcomers to the city is high. Federal programs, like Title I of the Elementary and Secondary Education Act, offer some relief in the form of funds for programs for the poor.

7. Personae

Findings—These are the personnels, clienteles, and other individuals and groups of people associated with a social structure or acting on it from without. Two types of personae are differentiated: (a) personnels are those internal to a given structure, and (b) clienteles are those external to the structure but which influence it.

The personnels are the "budget specialists," a stipulative term assigned by the writer to the nine key administrators within the district who are responsible for planning and administering the budget.

The clienteles served directly by the specialists are the school district employees and the board of education.

Problems—source and impact—The clienteles served directly by the specialists, the school district employees and the board of education, have much to be grateful for. The employees are among the highest paid in public schools in the nation. Teachers and administrators receive tenure after three years and enjoy a security akin to tenure even during the three probation years. These two factors result in a very stable certificated employee group. The school board's major function is to approve the budget and levy a tax rate to produce the required revenue. Because of the complexity of preparing and interpreting the budget document, the specialists, especially the superintendent and the chief of the division of fiscal control, are of inestimable value to the board in assisting them in the performance of this task.

The problem is that such a comfortable relationship exists between the budget specialists and their clientele (with the exception of a few teachers groups) that those teachers and administrators working most closely with the clientele of the district (the children and adults being schooled) are not challenged to be creative in their use of resources.

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[8] Cowley, W. H. *A Holistic Overview of American Colleges and Universities.* Stanford, Calif.: Stanford University 1965. p. 107.

8. Resources

Findings—This taxon deals with all the powers possessed by the budget specialists and employs the concepts of kinetic and potential powers. Currently used resources constitute those usable energies stipulated as kinetic powers. The potential powers of the budget specialists are those energies which are not in use.

The three types of in-use or kinetic power developed are economic, legal, knowledge, and demotic:

Kinetic economic power—Two elements constitute the in-use economic power of the district: (a) The assessed valuation was $14,420 per pupil in 1959-60 compared with a state average of $8,414 per pupil for unified school districts. The total assessed value of property was $1.6 billion in 1963-64, which put the city second in the state. (b) The tax rate, fixed by the board of education within limits established by the electorate ranged from $1.58 in 1954 to $2.59 in 1964.

Kinetic legal knowledge power—To find their way through the maze of rules and regulations established by the board of education, the State Board of Education, the State Education Code, and the charters of the city and county, the budget specialists rely heavily on two of their members: the legal advisor and the chief of the division of fiscal control.

Kinetic demotic power—A resource of great importance to the district and its specialists is the people who live in the city. The proportion of middle-class Caucasians in the city dropped from 90 percent in 1950 to approximately 70 percent in the mid-1960's.

Potential Power—Two sources of power, potential economic power and potential specialists' power were analyzed.

Potential economic power—Perhaps the most powerful influence over the quantity of potential economic power in the district has been exerted by the county assessor. James and others found that "assessed valuation per ADA is highly correlated with expenditures per ADA." [9] In 1959-60 the assessed valuation of the city amounted to $14,420 per pupil compared with a state average of $8,414 per pupil for unified districts. Two factors complicate the assessments for not only 1959-60 but for an undetermined number of years: (a) The county assessor in office since 1938 was found guilty of accepting bribes to lower tax assessments on May 28, 1966. At the time the study was done, the effect that these misdeeds had on the assessed valuation had not been determined. (b) A U.S. Bureau of Census report compared the actual price of all single-family dwellings sold during a six-month period in 1960 to actual assessed valuation. It reported that the average ratio was a low 11.8 percent. These dwellings account for about 34 percent of the gross assessed valuation. The assessed valuation for the school year 1960-61 should have been at least $19,000 per pupil instead of $14,420. (No attempt has been made to estimate the effect of the assessor's irregularities in judgment affecting the remaining 66 percent of the assessed valuation. If any of these came during 1960-61, the assessed valuation per pupil may have gone well above $19,000 per pupil.)

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[9] James, H. Thomas; Kelly, James A.; and Garms, Walter I. *Determinants of Educational Expenditures in Large Cities of the United States.* U.S. Office of Education, Cooperative Research Project No. 2389. Stanford, Calif.: Stanford University, 1966. p. 110.

Potential budget specialists' power—The budget specialists could have asked the board of education to spend more money than it has over the past 10 years. Most school districts operate very close to the tax-rate limit authorized by the electorate. However, the board of education has not come close to levying the permissible tax rate since at least 1954. This reluctance on the part of the specialists and the board is difficult to understand in light of a typical statement in 1960 by the superintendent:

> The story of American education is and always has been—the story of two parallel drives: (1) the persistent search for the perfect instructional program, and (2) the relentless struggle for adequate financial support.

Problems—source and impact—The kinetic, or in-use power of the specialists is considerable. Despite the substantial resources being expended for district operation, the potential power is even greater. Clearly, the county assessor's office has restricted the resources available to the schools and other governmental agencies of the city. If the new assessor were to correct the malfunctionings which in the past have resulted in an assessed valuation considerably below its potential, the present $2.50 tax-rate limit would yield much greater revenue for school district operation.

This would be true provided the budget specialists and the board proposed a budget to take advantage of the available taxing power. Since a substantial amount of available taxing power was unused from 1954 to 1964, pressures from some external sources, notably the municipal conference and the mayor's office, exceeded those from the NAACP, CORE, and other special interest groups.

9. Controls

Findings—A considerable number of controlling or influencing factors of both a formal and an informal nature affecting the budget specialists were developed. This paper will summarize only six.

Definitions—Formal (authoritative) control: "Ability (power) to enforce the rules and customs of a social structure, an ability based on the endorsement of its members or fear of sanctions." [10]

Informal control—influence: "Ability (power) to control an individual or group resulting from the possession of social power other than formal." [11]

Board of education—The board (appointed by the mayor and ratified by the electorate) is the most important clientele group controlling the action of the budget specialists. Because of the complexity of the budget document, the board spends little time on detailed line analysis. It is concerned with major proposed changes and how the total recommended expenditure compares with that of the previous year.

City government—The electorate gave the board of education its fiscal independence from the board of supervisors in 1924. Despite this official action, the mayor's office, as the administrative arm of the supervisors, reviews and influences the total school budget. Political observers note that elected officials would not survive a total tax rate higher than $9.50.

The influence of certificated and noncertificated employees on the budget specialist is noted. Salaries comprise about 80 percent of the district's operating budget, and the amount of money expended for salaries (among the highest in the nation) controls expenditures to a large degree for all other aspects of the school program.

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[10] Cowley, W. H. *A Holistic Overview of American Colleges and Universities.* Stanford, Calif.: Stanford University, 1965. p. 161.

[11] *Ibid.*

Municipal Conference—An influential organization, the Municipal Conference, is considered by the budget specialists to be the most powerful and most knowledgeable of any of the organizations concerned with keeping taxes low. Since about two-thirds of the property taxes are paid by corporations represented directly or indirectly in the Conference, the power of that group is evident.

Minority groups—With increasing demands made upon the specialists by leaders of minority groups, coupled with the increasing exodus of the middle-class Caucasian (and his replacement by the poor nonwhite) have come problems which increasingly engage the attention of the budget specialists.

Internal controls and influences—Two major sources of internal controls and influences were described as affecting the budget specialists. The formula, as a basis for allotment of funds centralizes decision-making and allows little freedom or incentive for creativity to teachers, principals, and department heads. Furthermore, the formula changed very little from 1954 to 1964.

The most powerful of the budget specialists, the superintendent of schools, represents a significant controlling factor in budget-making. If a variation in the formula is proposed by one of the other specialists, the superintendent must be convinced of the efficacy and efficiency of such a proposal.

Problems—source and impact—External and internal factors control the functions and functionings of the budget specialists. Of the external controls, the assessor plays the major role affecting available resources. Once the assessments have been made, the controls are judged to come from organizations like the Municipal Conference and the mayor's office. These external controls, coupled with the conservative fiscal policy of the superintendent and the other specialists (as reflected in the use of the formula), combine to keep expenditures well below those authorized by the electorate.

With the exodus of many middle-class citizens from the city and the replacement by the poor, a large proportion of the wealth of the city will be in the hands of a few. If the pressures to hold down expenditures continue to come from those holding the purse, despite the wishes of the electorate, a conflict of considerable dimension between the haves and the have-nots could be in the offing.

10. Structuring and Functioning

Findings—Structuring and functioning are closely related to the axial taxons, *structure* and *function*.

Structuring is defined as the internal ordering of a structure or of a system of structures. Although the specialists are often drawn together for the common task of planning, preparing, and administering the budget, each of these offices is structured in a manner which distinguishes it from the others.

Functioning is defined as "the ways in which a function gets performed."[12] Many of the decisions to be made are simplified because the formula provides parameters which prescribe the expenditure of about 86 percent of the total budget. If some modifications in the formula are desired, the change is usually made by sacrificing some aspect of the present program in order to add the new.

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[12] Cowley, W. H. *A Holistic Overview of American Colleges and Universities.* Stanford, Calif.: Stanford University, 1965, p. 154.

Problems—source and impact—The formal and informal structurings of the specialists are very much alike. That is, the superintendent not only has assigned status as the executive officer, but also his actual status among the specialists ranks him at the top. Therefore, as the most important figure among the specialists, the superintendent dominates the structure, and the functioning of that group is influenced accordingly.

The functioning of the specialists has been reduced mainly to applying the formula. Any variation proposed by a specialist must be justified to the superintendent.

11. Products

Findings—Products are defined as the entities formed or modified by the functionings of a structure. The major product of the specialists, the budget document, incorporates two other products closely linked to the functioning of the budget specialists: (a) Schedule N, Formulas for Assignment of Teachers; and (b) Schedule H, Per-Capita Costs of Education.

Schedule N, Formulas for Assignment of Teachers—The effect of the application of this schedule on class size was examined. Mean class sizes for 1959 and 1962 were compared. The average junior high-school class grew from 32.8 to 34.2, and the average senior high-school class increased from 32.0 to 32.7. At the elementary level, the median class sizes were: kindergarten, 22.5; grade 1, 26.3; grades 2 and 3, 31; and grades 4, 5 and 6, 33.9.

At the junior high level 356 classes in English, social studies, mathematics, and science had enrollments of 40 pupils or more. At the high-school level, the number of classes of 40 or more was 44.

Schedule H, Per-Capita Costs of Education—Another significant product of the work of the budget specialists is the amount of money expended per pupil. This factor was regarded for a number of years as the best indicator of the quality of an educational program. While the importance of money spent per pupil may have been overrated, it is still regarded as an important factor. School district expenditures per pupil were better than average for the Great Cities in 1959-60. In 1962-63, the costs per pupil averaged $530 with the costs ranging from $1,230 for special schools for mentally and physically handicapped to $289 for adult schools.

Problems — source and impact — Two significant products of the functioning of the budget specialists were examined; they are reflected in the formula for assignment of teachers and in per-capita cost of education. The formula by which elementary-school teachers are assigned appears to accomplish what the specialists want it to, since median class size is very close to the ratio by which teachers are assigned. However, in the junior and senior high schools it appears that the average class size is considerably higher than called for in that formula. Furthermore, there was a wide variation in size of class particularly at the junior high level. In 1962 there were 66 academic classes with 20 or fewer pupils and 356 classes with 40 or more. Educators are far from agreement as to the effect of class size on the teaching-learning processes. However, few would disagree with the point that (with other factors held constant) pupils in classes in English, social studies, mathematics, and foreign languages with 20 or fewer pupils have a much better chance at achieving the desired outcome than do the pupils in classes of 40 or more.

12. Images

Findings—An *image* is defined as "a conception held in common by members of a group and being symbolic of a basic attitude and orientation toward something (such as a person, class, racial type, political philosophy, or nationality)."[13] Two types of images were developed in this section: (a) self images, the budget specialists' opinions of themselves; and (b) the opinions or reputations of the specialists as held by their clienteles, the school district employees and the board of education.

The self-image of the specialists seems to be that they pride themselves on their efficient, careful use of the taxpayers' money. The specialists believe that they serve their clientele well by providing excellent salaries to teachers, administrators, and classified personnel and by furnishing to the board a well-prepared budget document to guide them through their most important and difficult function, budget authorization.

Most of the clienteles served by the specialists appear to hold essentially the same image of the budget specialists as the specialists hold of themselves: "efficient, concerned with obtaining the maximum educational program with an eye on the taxpayers' pocketbook." The exception to this agreement appears in the statements of teachers groups such as the American Federation of Teachers and the teacher groups associated with the National Education Association. These teachers appear to view the specialists as too inflexible in the use of the formula, and they have expressed their desire to participate in major decisions regarding the budget to a much greater extent than in the past.

Summary

W. H. Cowley's Holistic Taxonomy for the Study of Social Institutions has been used to describe the unique quality of the *structure* treated in this paper—the budget specialists of a large city school district in western United States. At the end of the summary of each taxon, problems were discussed in an attempt to stimulate further investigation into the functions and structure of those key officers in the district who make the major internal decisions affecting the expenditure of tens of millions of dollars for operation of the schools each year.

The findings of the study indicated that the Cowley Taxonomy was a valuable tool for the analysis of the complex processes attendant to the planning and administering of the budget of a large city school district.

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[13] *Ibid.*, p. 180.

The Relationship of Selected Factors to School Bond Interest Rates in Selected New York State School Districts

Richard E. Ten Haken

THE PURPOSE OF this study was to examine the relationship between bond interest rates in selected New York State school districts and bond administrative practices. The thesis for the study was that there were identifiable differences in administrative practices between those school districts which received lower effective rates of interest and those which received higher effective interest rates. This study was further designed to examine selected factors purportedly affecting school bond interest rates to see if the school districts whose administrators practiced them to a greater extent tended to receive different effective interest rates. It sought to identify selected internal factors, or practices, that an administrator could control, which appear to be related to school bond interest rates.

Method of Procedure

From a review of pertinent literature in the field an instrument was prepared and validated which synthesized the principles and practices considered by authorities to be fundamental to sound school bond administration and permitted Yes and No responses. All school districts that were legally classified as central, village central, and union free and that sold bonds for capital improvements at a public sale during the 1965 calendar year comprised the group studied. Of the 90 school districts which sold 93 bond issues, replies were received from 57 districts, representing 58 sales; this was a 63 percent return.

Six hypotheses were examined in the study.

To test the hypotheses, to compare bond administrative practices, a score value of 1 was assigned to the Yes responses on the instrument and a value of 0 to the No responses. Total scores for each section and the total instrument were then determined. Those practices that were significantly different from 0 at the .05 confidence level or better were determined for each of the six sections of the instrument, corresponding to the six hypotheses, and for the total instrument by the following three procedures:

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1. Pearson product-moment correlations were computed between the score of the total instrument and the score for each of the six sections of the instrument, and effective interest rate. Significance was determined by means of the *t*-test.

2. A stepwise multiple regression analysis was next computed to ascertain the relative importance of each section and to determine the multiple correlations by using effective interest rate as the criterion. The level of significance was determined by the F test.

3. An item analysis of each of the 134 items was made by using a point biserial correlation with effective interest rate as the criterion. The level of significance was determined by means of the *t*-test.

These three procedures were then repeated with the New York Residual[1] as the criterion, dependent variable. Following this, an analysis of 34 basic informational items obtained from a second part of the questionnaire was made by the following procedures:

1. Pearson product-moment correlation between these selected factors obtained from the basic bond issue data form and effective interest rate as the criterion was computed. Significance was determined by means of the *t*-test.

2. Stepwise multiple regression analysis of these selected factors obtained from the basic bond issue data form by using effective interest rate as the criterion was computed to ascertain the relative importance of each factor and the resulting multiple correlations. The level of significance was determined by the F test.

Summary of Findings

When the hypotheses were examined on the basis of the findings from the Pearson product-moment correlation, these conclusions were drawn:

1. Administrative behavior associated with selected legal services is significantly related to differences in effective interest rate at the .05 level or better for all schools.

2. Administrative behavior associated with selected financial planning aspects, application to credit rating organizations, characteristics of the prospectus, aspects of the publicity and notice of bond sale, and aspects of the actual bond sale is not significantly related to differences in interest rate at the .05 level or better.

When the hypotheses were examined on the basis of findings from use of the stepwise multiple regression analysis, the following conclusions were drawn:

1. Administrative behavior associated with selected legal services is the most important aspect for all school districts studied and is significantly related to differences in effective interest rate at the .05 level or better.

2. There is a significant relationship at the .05 level or better between effective interest rate and administrative behavior associated with selected financial planning aspects, application to credit rating organizations, and aspects of the publicity and notice of sale when these sections are combined with legal services for school districts in all New York State counties.

3. Administrative behavior associated with characteristics of the prospectus and aspects of the actual bond sale is not significantly related to differences in effective interest rate at the .05 level or better.

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[1] New York Residual is the residual variation in interest rate after accounting for the New York State interest rate changes.

An item analysis of each of the 134 internal factors or practices within the instrument found the following to be significant at the .05 level or better for all school districts:

1. Consulting reputable investment bankers as to their opinion on the price outlook for municipal bonds preceding the sale was related to higher effective interest rates.
2. A statement in the prospectus concerning whether or not the school district's citizens are home-owners or renters was related to lower effective interest rates.

The following items were significant at the .05 level or better for all school districts, excluding those in the counties of Nassau, Suffolk, Westchester, and Rockland:

1. Supervision of the preparation and execution of temporary financing by the bond attorney was related to higher effective interest rates.
2. Making the first interest payment six months or sooner from the date of the bonds was related to higher effective interest rates.
3. A statement in the prospectus concerning whether or not the school district's citizens are home-owners or renters was related to lower effective interest rates.
4. Enlisting the assistance of a financial consultant was related to lower interest rates.
5. Using the *Financial Reporter* to publicize the bond sale was related to lower interest rates.

The following items were significant at the .05 level or better for all school districts when they were correlated with the New York Residual, after accounting for the variations in the New York interest rate changes:

1. Enlisting the cooperation of local or area municipal finance officers in planning the bond issue was related to lower interest rates.
2. Reporting in the prospectus the amount of outstanding indebtedness of overlapping units of government was related to higher interest rates.
3. Including in the notice of sale a statement concerning the option or options of bond holders as to registration at district expense was related to higher interest rates.

Some other findings obtained from the study were as follows:

1. The total number of bids received on the bond issue was significantly related to lower effective interest rate at the .01 level.
2. The length of the issue was significantly related to effective interest rate at the .001 level (the longer the maturity of the issue, the higher the effective interest rate).
3. The time of the year was significantly related to effective interest rate at the .001 level (the later in the year the sale was held, the higher the effective interest rate).
4. Neither Moody's nor Standard and Poor's rating had a significant correlation to effective interest rate. However, Standard and Poor's was substantially better than Moody's.
5. The purpose of the issue had little relationship to the interest rate received.
6. Contrary to that which had been stated in the literature, the day of the week and hour of the sale were found not to be significantly related to the effective interest rate received.
7. Having registered bonds included or available in the offering had little relationship to the effective interest rate received.

8. The type of school district had almost no relationship to the rate of interest received.

9. Having the debt exceed 10 percent of the true property valuation had little relationship by itself to the effective interest rate received.

10. The size of the school district had little relationship to the effective interest rate received.

The following external factors were significantly related to effective interest rate at the .05 level or better:

1. The United States interest rates for the month in which the sale was held

2. The average New York State interest rates for the month the sale was held

3. The actual valuation of real property per resident student in weighted average daily attendance (the higher the valuation, the lower the effective interest rate)

4. The gross bonded indebtedness (the greater the indebtedness, the higher the effective interest rate).

It was concluded that there are identifiable differences in administrative practices between those school districts which receive lower effective interest rates and those which receive higher effective interest rates.

School Community Relations and Financial Support

Francis M. Trusty

In recent years the increase in federal monies to local school districts, higher public expectations regarding quality education for all students, changing values of American citizens, and the complexity of involving citizens, teachers, and federal administrators in decision-making highlight the problem of better assessing the political, economic, social, and educational expectations of communities for their schools. Citizen approval continues to be reflected in the level of local support for public education. Local involvement in public education, financial and otherwise, will continue to be an important factor in the improvement of public education in the foreseeable future. Increased understanding of the community-school relationship and the effect of financial support patterns upon the schools seems to be imperative.

Purposes of the Study

This study was an attempt to know better this complex relationship, to identify specific factors which are operative within the schools, within the community, and between the school and the community. This study also attempted to describe what well-informed people involved in school-community relations perceived as the effect of these factors on this relationship.

Procedure

Respondents participating in the study came from small, medium, and large school districts. Small districts had enrollments of 3,000 or fewer pupils. Medium size districts had 3,000 to 12,000 pupils, and districts with 12,000 or more pupils were classified as large school districts. Classified as success communities were 209 in which school districts had secured approval of the last four school bond or tax elections. The 180 districts which had lost one of the last four school bond or tax elections were regarded as failure districts. Respondents included the superintendent of schools, a school-board member, a mass media representative, a school supporter, and a school critic. These respondents indicated whether items helped or hurt local school-community relations or had no effect.

The content areas represented by the 162 items related to elections, nonelections, voter characteristics, community characteristics, administrator

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attributes, school personnel, students, education officials, school procedures, the school board, mass media, voluntary groups, school-originated communications, community-originated communications, and jointly originated communications. Data were collected and analyzed by size of district, by failure and success, and by respondents.

Findings

For purposes of brevity I shall not discuss the statistical procedure used in analyzing these data. I shall instead point out some of the major findings which emerged from the study. As you might have expected, size of school district makes a difference in the perception of informants regarding what helps and hurts school-community relations. Respondents in large and medium size districts see better those factors which hurt in failure communities than they do factors which help in success communities. This means that people see more clearly things which hurt than things which help. In small districts respondents see more clearly things which help than things which hurt.

I suggest that how districts communicate makes a difference in what is communicated and therefore what the community sees. For example, newspapers constitute an important source of information for the public in large school districts, and they tend to report and emphasize the failures or problems of schools rather than their successes. Communication in smaller districts tends to be more on a person-to-person basis with the message being positive and emphasizing school successes.

Factors seen as hurting in large failure communities include unorganized chronic critics of the schools, staff organizations (e.g., unions), and property assessment procedures. Factors seen as hurting in medium size failure districts include farmers, conservative nature of voters, and citizens committees for schools. Factors seen as hurting in large and medium size failure communities include organized chronic critics of schools, attitude of voters toward taxes, attitude of voters toward business outlook, quality of opposition techniques, public meetings sponsored by opposition to schools, bulletins or letters published by opposition, and use of mass media by opposition to schools. These findings show that informants in large and medium size school districts see more clearly those factors having negative effects on school-community relations. Obviously the communicatory activity of school opponents is more clearly seen than the communicatory activity of the school and its supporters.

In small size success districts the factors most clearly seen as helping include school administrators as community leaders, school summer programs, loyalty of staff to administration, state aid for schools, youth organizations and clubs, degree of urbanization, dependence upon government contracts or installations, city officials, and availability of school facilities for community use. The data reveal that size of district makes a difference in perception of factors seen as helping or hurting school-community relations. In medium and large communities there is a serious problem of communicating effectively about the schools.

Respondents saw other factors which appeared to help in failure communities or to hurt in success communities. Factors seen as helping in large size failure communities were programs for gifted children, quality of teaching staff, quality of non-teaching staff, advisory boards or committees for schools, speeches by administrators during campaign, and campaigning for schools by PTA members. However, these activities did not help enough.

In medium size failure districts, the following factors were seen as helping: school summer programs, public attendance at school-board meetings, campaign emphasis on enrollment pressure, schools' use of informal or face-to-face contact, schools' employment of public relations specialists, and public meetings sponsored by citizen committees. Reverting to activities which help in small size success districts was not the answer in medium size failure districts.

In small size failure districts factors seen as helping include teachers running for political office and lack of agreement among school representatives in election campaign. Factors seen as hurting in small size success districts include students leaving school before graduation, unorganized chronic critics of schools, citizens committees for schools, mass media and their executives concerned with themselves only, mass media and their executives as "watch-dogs" of public servants and public monies, competition among the mass media, and investigations of school by municipal or county bodies, e.g., grand jury investigations.

When the findings were analyzed by respondent types, it was discovered that approximately three-fourths of the informants shared the perception that factors related to opposition groups and their activities were seen as hurting in failure communities. Approximately two-thirds of informants shared the perception that factors related to school and citizen committee communication activities in election campaigns helped in failure communities.

Some informants see factors as helping in success communities. Other informants see these same factors as hurting in failure communities. For instance, staff organizations, such as unions, are seen by superintendents as helping in success communities. Mass media representatives and school critics see this factor as hurting in failure communities. Superintendents probably view the work of such organizations as helping to keep their membership informed and active in getting community support for the schools' fiscal policies. On the other hand, mass media spokesmen and school critics may see unions as hurting because of pressure tactics used by the organizations.

The factor, property assessment procedures, is judged by both school supporters and school critics as hurting in failure communities. But school supporters may see the procedures as keeping assessments and school support down, while school critics may see the procedures as discriminating among property owners or not acting sufficiently as a curb on public spending.

It is suggested that informants are able to judge better those factors which are present than those which are absent. Thus, when critics express their opposition through the use of bulletins, letters, use of mass media, and public meetings, informants see these factors as hurting more in failure communities than helping in success communities. In all probability this judgment is precluded in success communities because the absence of these factors would prevent informants from judging them.

There are many similarities among informants' perceptions. Superintendents see the conservative nature of voters as helping in success communities. They see private and parochial schools, composition of the school board, relations between communities within the school district, degree of urbanization, and farmers as hurting in failure districts.

Board members see the school board's educational philosophy, the school board's reaction to proposed changes, and citizens committee for schools as helping in success communities. They see the school board's relations with the public, school-board member's qualifications for the job, school-board procedures, voter turnout at school elections, parent-teacher associations and parents clubs, advisory boards or committees for schools, and study groups or workshops on school problems as hurting in failure communities.

Mass media spokesmen see the racial composition of population, educational level of population, and mass media and their executives concerned with themselves only as helping in success communities. Factors seen as hurting in failure communities include age distribution of the population and cooperation between mass media and schools.

School supporters see unorganized chronic critics of schools and investigations of school by municipal or county bodies, e.g., grand jury investigations, as hurting in failure communities.

School critics see campaign emphasis on enrollment pressure as helping in success communities. Critics' perceptions of factors which hurt in failure communities include teacher participation in school district elections, federal aid to the schools, procedures for adopting the school budget, and lack of agreement among school representatives in election campaign.

There is a greater similarity of perceptions between large and medium size district respondents than between either large or medium and small district respondents. Superintendents and school critics are least similar in their perception of the factors affecting school-community relations.

Summary

In summary, the data gathered in this study indicate that size makes a difference in school-community relations. In large and medium districts informants are less able to perceive the total school situation. This hinders the flow of information, blocks agreement on what the situation is, and makes for misunderstanding. The positive factors which provide people with reasons for supporting the schools are not easily visible. At the same time criticism is spotlighted and provides people with reasons for not supporting the schools. It appears that small districts are communicating better; but as districts get larger, the communication system becomes inoperative and no other effective communication system takes its place.

It is possible that communication agencies emphasize differences, thereby highlighting criticisms. This results in communicating aspects of school-community relations which become controversial. The failure of a communication system to present positive information about school-community relations may be a cause of school-community conflict. An interpretation of the data suggests that it is easier for informants to judge what is present and visible than what is not present. Factors relating to opposition groups are thus more easily seen and judged in failure communities than in success communities.

Informant perceptions and school financial records indicate that misunderstanding exists and reveals a lack of adequate communication between schools and community. Similarly, correlations between informant perceptions indicate that informants perceive the situation differently.

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